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## THE ETHNOLOGY OF FUNAFUTI.

BY C. HEDLEY, Conchologist.

## INTRODUCTION.

MUCH of the information conveyed in the "General Account" could have been included with equal appropriateness in the present chapter; to it the reader is therefore referred for details not here repeated.\*

The natives of the Ellice Group appear to be closely allied to those of the Phoenix and Union Groups, and also to those of several small outlying islands,† and atolls in the same neighbourhood, extending perhaps as far as Rotumah and Fotuna. This branch of the Polynesian Race may, for want of a better comprehensive term, be called the Tokelau People.

We are much in want of a satisfactory subdivision of the Polynesian Race. The only classification with which I am acquainted is that of Dr. H. Stolpe,‡ based upon ornamental art. Good though this undoubtedly is, yet a broader basis including physique, language, religion, and so on, is required for a sound arrangement. Dr. Stolpe throws the branch here proposed to be called Tokelau into his Province of Tonga-Samoa, from the remainder of which I would clearly distinguish it by, *inter alia*, the different gods they worshipped and the difference of tattoo.

The Tokelau People are closely related to the Samoans, whose standard of civilisation is, however, far superior. Either therefore, they have degenerated, as is probable, amid unfavourable surroundings or they branched from the parent stock before the latter reached the degree of superiority they afterwards attained.

Glancing for an instant further afield, I would draw attention to many points of resemblance between the Japanese§ and Polynesians that have occurred to me; such are their graceful courtesies

\* For an article "The Legendary History of Funafuti," by Prof. W. J. Sollas, see *Nature*, 11 Feb., 1897.

† Compare the account given of Fotuna or Horne Island.—*Journ. Polyn. Soc.* i., 1892, pp. 33-52; of "Rotuma and the Rotumans," *Rev. W. Allen.—Proc. Aust. Assoc. Adv. Sci.*, 1895, (1896) p. 569; and Lister, "Notes on the Natives of Fakaofu."—*Journ. Anthropol. Inst.* xxi., 1892, p. 43.

‡ *Trans. Rochdale Lit. and Sci. Soc.*, iii. 1893, p. 73.

§ Polynesian relations to the Corea are noted by Stair.—*Journ. Polyn. Soc.*, iv., 1895, p. 55.

in peace and fierceness in war, the status and freedom of their women, the position and authority of their chiefs, the existence of a court language, their dexterity and daring in navigation and deep sea fishing, and their skill in tatooing and in manufacturing bark cloth or paper. In all of which features they are opposed to the Melanesians. To institute closer comparisons between the language, manners, customs and implements of the two races is an inviting task, which opportunity does not permit me to pursue, but I would submit it as a problem worth investigation, whether the Polynesians may not stand in the same relation of distant and degenerate kin to the Japanese as the Australian Blacks are known to hold towards the Indian Dravidians.

Since the above idea occurred to me I have perused with pleasure and profit an article by Mr. A. H. Keane, "On the Relations of the Indo-Chinese and Inter-Oceanic Races and Languages,"\* This writer points out that "for science, there is no organic Malay type, Malay being a national not a racial designation." Other writers† have shown that the Japanese of to-day is likewise a fusion of several distinct stocks. Keane's view that the Polynesian of the Pacific represents an ancestral type now obliterated almost or altogether as a pure race in South East Asia, but still there discernable as a component element in existing people, has much to recommend it.

The route of the Polynesian from South East Asia to his present abode is generally held‡ to have been through Papua, south-eastwards through the larger islands of the western Pacific, by Fiji to Samoa, thence to Rarotonga and finally to Hawaii. Against this it seems to me an insuperable objection that the Samoans and Eastern Polynesians were without any Papuan strain physically, and had acquired none of the Papuan manners and customs, such as the art of pottery, which a transit through Papuan lands could not fail to impress upon them. Besides, at the point of contact between the two races, we now see a contrary wave of Polynesian blood and influence actually in motion from east to west. In the Fijian Archipelago there is a gradual transition from a preponderance of Polynesian in the east to a preponderance of Melanesian in the west. Less marked but perceptible is the change in the New Hebrides, and in the Solomons it can again be faintly seen, while New Caledonia furthest west appears purest Melanesian. Even in the east of New Guinea, Polynesian influence is traceable though here once more it declines westward. That such authorities as Wyatt Gill and Percy Smith should derive the Maories from an eastern source—the Hervey and Society Groups—accords better with the following hypothesis than with the accepted theory. Ellis

\* Journ. Anthropol. Inst., ix., 1880, p. 254.

† Griffis—The Mikado's Empire, 1887, p. 27.

‡ Rankin—Journ. Anthropol. Inst., vi., 1877, p. 233.

regarded the Tahitian as an offspring of the Hawaiian stock, the longer genealogies of the latter indicating superior antiquity.\*

Had the Polynesian migration taken the route usually ascribed to it, why should not its influence have been as strongly impressed on the west as it is on the east of the Melanesian tribes; why should that influence rapidly increase eastward, and above all why should the brown man, while leaving his mark on the susceptible black, yet have entirely escaped reciprocal treatment?

An alternative hypothesis, which would avoid these objections but which does not appear to have been examined, is that the Polynesian travelled from Asia, first to the Hawaiian Group† and after, perhaps, considerable sojourn there, migrated to Tahiti and thence to Samoa.

Physique, language and tradition alike point to Samoa as the immediate ancestral home of the Tokelau People. Estimated by the chronological standard of European history it is possible that this archipelago has been but recently colonised.

Pritchard relates a tradition of Vaitupu, which places the arrival of the first comers at seventeen generations back.‡

Communication with the Gilbert Islands to the north probably wrought in the life of the Ellice Islanders a change comparable with the later change induced by European contact. A social revolution must have been effected by the acclimatisation of the coconut alone, involving as it did the introduction of the Gilbert Island system of land tenure.§ The tattoo patterns certainly followed the same route, and doubtless various social and religious practices accompanied these.

\* Ellis—Polynesian Researches, i., 1832, p. 123.

† Two suggestive facts may here be mentioned; one is that Hillebrand considers the *Broussonetia* or tappa plant, the most peculiar possession of the Polynesian, to be a native of Japan; the other that Japanese junks have drifted to Hawaii with occupants still living.

‡ Pritchard—Polynesian Reminiscences, 1866, p. 403. Of the Gilbert Group, Wilkes wrote:—That the islands have been peopled within a period not very remote is believed by the natives themselves" (*loc. cit.*, v. p. 86). Kotzebue considered with regard to Romanzoff Atoll in the Marshall Group, that, "all the islands had been but lately inhabited," (*Voy. Discovery* ii., 1821, p. 45). And Gill declared that, "The result of my researches is the belief that the Hervey Islands have been inhabited not more than six centuries," (*Journ. Anthropol. Inst.* vi., 1877, p. 7). It is stated (*ante* p. 61) that the presence of phosphate in the gardens is inexplicable to me. Dr. Guppy's observations on the Keeling Islands (*Scot. Geogr. Mag.*, v., 1889, p. 292) have now made it clear to me that this phosphate is a relic of the bird guano deposited before the arrival of man. If the rate at which these phosphates disappear could be ascertained, data would be available for calculating the time the islet has been inhabited. On Cocos Keeling half a century had reduced it to a trace.

§ Compare the account on p. 61 *ante* with *Journ. Polyn. Soc.*, i., p. 266 and with Wilkes—U.S. Explor. Exped., v., Chap. III.

Funafuti is for many reasons an unfavourable centre for Ethnological research. In weeding out the so-called immoral practices of heathen days, the missionary agents seem, to a casual onlooker, to crush out many innocent recreations, uprooting the wheat and the tares together. The trader, another civilising influence, does his part by substituting European wares for native products. But the greatest shock the native civilisation suffered was when the South American raiders almost depopulated the atoll thirty years ago.\* The place of the expatriated natives was largely taken by immigrants from other islands.

On glancing over the ground covered by the following paper my predominant impressions are: firstly, the poverty of our knowledge of Polynesian Ethnology and the superficial way in which it has been studied; and secondly, the rapidity with which the knowledge of it that might yet be gathered is vanishing. Though in a library catalogue the bulk of Polynesian literature appears large, yet when consulted upon trivial points it rarely responds satisfactorily. Travellers seem to have contented themselves with observing and collecting only the most obvious incidents and articles. "If investigators and students would seize upon those features in social life—form of etiquette, games, ceremonies, and other manners and customs—which are the first to change in any contact with alien race, a very important work would be accomplished for the future sociologist."†

Although I have constantly appealed to, and derived much help from Edge-Partington's valuable Ethnographical Album, yet I am compelled to say that, without confirmation, the use or locality of any implement he figures, dependent as he often was on second-hand information, cannot be trusted; indeed the long list of corrections he supplies, are to a thoughtful reader a sufficient warning.

The following remarks of Professor Haddon cannot but receive the heartiest endorsement of all interested in this study. "Only those who have a personal acquaintance with Oceana, or those who have carefully followed the recent literature of the subject, can have an idea of the pressing need there is for prompt action.

\* The blackest pages in the story of the South Sea Islands are those describing the Peruvian piracies. Twenty-five vessels were fitted out in Callao for the purpose of procuring ten thousand Polynesians for forced labour in Peru. The densely peopled and more warlike islands of the west were avoided, but the gentler people of the mid Pacific were deceived and deported wholesale, one instance of which is related on p. 5. Early in 1863 about 2000 Polynesians were captured, transferred to a depôt on Easter Island, and ultimately forwarded to South America. Unaccustomed to hard and continuous labour these unhappy victims soon perished. Among other groups the Tahitian was raided, but the French, in whose dominion those islands were, not only captured six vessels and punished the slavers, but took measures to prevent a repetition of the offence. An account of the affair is given in the *Sydney Morning Herald* of June 20th, 1863.

† Morse—*Japanese Homes*, 1888, p. 8.

In many islands the natives are fast dying out, and in more they have become so modified by contact with the white man and by crossings due to deportations by Europeans, that immediate steps are necessary to record the anthropological data that remain.”\*

In writing down native names an endeavour has been made to follow the system of orthography adopted by the Royal Geographical Society, in which the vowels are pronounced as in Italian and the consonants as in English. How loose the natives themselves are in their pronunciation and how difficult it therefore is to decide upon a correct spelling, only travellers are aware.

The terms—Polynesian, Micronesian and Melanesian—have such different values in the writings of different authors that it is necessary to state that in subsequent pages they are used in the meaning imposed upon them by Whitmee.†

For a valuable contribution to this section I am again indebted to the kindness of Surgeon F. W. Collingwood, R.N., late of H.M.S. “Penguin.” To the skilful pen and sympathetic courtesy of my friend Mr. Norman Hardy, I owe the drawings of the native using the coconut scraper and the man putting on his “tukai” dress. For the remainder of the illustrations I am myself responsible.

Any merit which the following descriptions of implements (essays in an unfamiliar field of research) may possess, is due to the advantage of a course of study of Australian weapons and implements, under Mr. R. Etheridge, Junr., whose advice and suggestions have constantly aided me in the preparation of the present paper.

#### ANTHROPOLOGICAL MEASUREMENTS.

By the extreme courtesy of Surgeon F. W. Collingwood, R.N. of H.M.S. “Penguin,” whose observations enriched some of my earlier pages I am enabled to incorporate in this article a series of measurements of adult males. The plan of the measurements is that recommended by Dr. John Beddoe, F.R.S., in the “Notes and Queries on Anthropology for the use of Travellers and Residents in Uncivilised Lands,” 1874, which were drawn up by a committee appointed by the British Association for the Advancement of Science. I need hardly point out that the fact of these measurements having been taken by an experienced medical officer much enhances their value.

The subject *A* was a native of Funafuti, aged 26, no wisdom teeth, dentition otherwise perfect; *B*, a native of Funafuti, aged 28, nose straight, slightly flat, lobe of the ear rudimentary, all

\* Haddon—*Nature*, 28 Jan., 1897, p. 306.

† Journ. Anthropol. Inst., viii., 1879, pp. 261–274, and map; these definitions have since been accepted by the *Encyclopædia Britannica*, Stanford’s *Compendium of Geography*, the *Godeffroy Museum Catalogue*, and other standard works.

wisdom teeth cut, decayed dentition, right upper central incisor, right lower first molar slight, left upper central incisor, first, second and third molar, and left lower, second, molar; *C*, a native of Funafuti, aged 20; *D*, a native of Funafuti, aged 18, afflicted with quinodarus in the left foot, the left leg having a maximum calf circumference of only 29 cm., wisdom teeth present, dentition perfect; *E*, a native of Funafuti, aged 50; *F*, a native of Funafuti, aged 24, intelligent, benevolent face, lobe of ear slight, wisdom teeth none, dentition perfect; *G*, a native of Funafuti, aged 28, no wisdom teeth, dentition perfect; *H*, a native of the neighbouring atoll of Vaitupu, aged 30, lobe of ear slight, teeth perfect, wisdom teeth all cut; *I*, a native of Nui, aged 24; *J*, a half-caste, mother a native of Funafuti, aged 20–21 years, angular chin, no marked lobe of ear, imperfect teeth, left lower, second and third molars.

Though the women predominated over the men almost in the proportion of three to two, it was not found possible to subject them to measurement.

Dr. Collingwood further notes that the islanders are a fine race of people, of good stature, long armed, with intelligent faces and good manners. The colour of the skin varies somewhat, of a dark fawn colour, the noses are somewhat flattened and broad, and they have moderately thick lips. The half-castes surpass, in many cases, the pure natives in strength, appearance, and their capability of fishing and other native employments. The women allow their hair, which is very black, luxuriant, wavy and sometimes distinctly curly, to grow fairly long. In one family of a mother and three children the hair was distinctly reddish-brown.

Of the series of coloured casts of faces of the South Sea Islanders published by Dr. Finsch of Bremen, one, No. 48, of an Ellice Islander does not strike me as a typical specimen. The colour seems to me too light and the forehead too sloping to be characteristic.

The long arms noticed by Lister\* on Fakaafu equally characterise the natives of Funafuti. Wilkes calls attention to a singular attitude, which he illustrates, affected by a Funafuti native, who rested the sole of one foot on the knee of the opposite leg. How natural a posture this is can scarcely be appreciated by a wearer of boots and trousers. Collins and Lumholtz† have drawn Australian Aborigines in this position, and Lesueur‡ a Tasmanian. Mr. Hardy has photographed men at Simbo and at Samarai resting in this posture.

The following measurements are in centimetres.

\* Lister—Journ. Anthropol. Inst., xxi., 1892, p. 46.

† Collins—English Colony in New South Wales, 1804, pl. xvi.; Lumholtz—Among Cannibals, 1890, p. 77.

‡ Lesueur—Voyage aux Terres Australes, 1804, Atlas, pl. xv.

	A	B	C	D	E	F	G	H	I	J
Height from ground of vertex ... ..	160·3	172·2	167·9	163·8	158·5	171·8	175	165·8	166·5	169
„ „ of meatus auditorius (opening of ear) ... ..	146·2	158	...	...	145·5	...	...	151·25	153·6	157
Height from ground of chin ... ..	137·3	149	146·6	142·2	138·1	148	...	142	142	146·5
„ „ of top of sternum (breast bone)	131	143	137·6	137·1	129·4	141·6	145·8	134·6	137·5	134·4
„ „ of umbilicus ... ..	93·5	106·6	...	95·7	95·6	105	104·6	98·3	100·4	101
„ „ of upper part of trochanter ( <i>i.e.</i> of point where upper end of thigh bone felt pro- minent under skin) ... ..	84·5	...	85·2	91	85	91·9	99·2	...	87	85
Height from ground of articulation of knee ... ..	48·2	...	...	49·1	47	52·7	56·3	47·2	49·3	49·3
„ „ of point of acromion ( <i>i.e.</i> anterior point of shoulder, felt by carrying finger along collar bone to its outer extremity) ... ..	...	143·1	...	134·7	129·2	143	147·3	137·25	138	141
Height from ground of elbow ... ..	95·1	104·5	102·2	98·1	101	104·1	...	101	104·2	105·5
„ „ of point of midfinger (hanging vertically) ... ..	54	61·6	59·5	55·3	53	62·8	62·6	62·3	55·4	61·3
Height when sitting on the ground ... ..	...	91·2	87·3	83·2	77·5	85·2	88·1	89·1	83	88·8
The breadth of shoulders ( <i>i.e.</i> between the acromia)...	...	40	38	36·5	41·5	40	...	40·8	34	42
„ „ of haunches... ..	...	...	...	...	...	...	...	...	25	27
Circumference of chest at arm-pit ... ..	91	98·5	91	89·2	96	95	97·8	96	85	98
„ „ at mamma ... ..	92	99	91	92	97	95·8	99·5	98	84·6	98·2
„ „ of haunches ... ..	...	...	...	...	85·2	...	...	90	74	...
„ „ of trochanters ... ..	...	...	...	...	86·2	...	...	...	...	...
„ „ of neck ... ..	...	36	36	35·8	34·5	38	...	37	31	36
„ „ of waist ... ..	74	87	79·5	75·5	...	82·6	...	83·8	71	75
„ „ of calf, maximum ... ..	...	38	36·6	32·5	...	34·2	37	36	...	...
„ „ of arm, maximum ... ..	...	33	...	27·3	...	29·5	32	33	23	30·5
„ „ of forearm, maximum ... ..	...	30·2	...	27·5	...	29	28·5	31	25	28·8



	A	B	C	D	E	F	G	H	I	J
Span of outstretched arms ... ..	173	184.5	173.5	178	162	183	184.5	169.5	181	179
„ of thumb and midfinger ... ..	...	{ 18.2	...	18	...	16	18.5	17.5	21	17
		22	...	22.6	...	...	...	sp.19.2	...	sp.21
Length of thumb, from second joint to tip ... ..	...	3.5	3.0	3.6	...	3.3	3.4	3.4	3.5	3.5
„ of foot ... ..	...	25	27	...	...	25.5	27.5	25.5	...	25
Greatest circumference of head from the glabella ...	56.5	56	57.4	57.7	54	57.3	58	57	53.8	55.5
Arc from notch at root of nose toinion ... ..	34.8	35	36	37.2	32	34.9	34.8	36.4	33.2	34
Arc from tragus to tragus over top of head ... ..	36.5	38	38	37	36	38	37	38	36.5	36
Arc from tragus to tragus over superciliary ridges and glabella ... ..	30.3	29.5	30.5	29.7	29	31.3	31.8	30	29	29
Greatest length from glabella backwards ... ..	19.3	17.9	18.7	19.5	18	18.6	19.4	19.1	18	18.2
„ „ from smooth spot immediately above glabella ... ..	19.3	17.8	18.8	19.8	18	18.5	19.4	19	18	18.1
Length from glabella toinion ... ..	19.45	18.1	18.2	19.4	17.2	18.5	19.4	18.85	17.5	18.2
Greatest breadth of head... ..	14.6	16.2	16	14.4	15	16	15.7	15.5	14.8	15.6
Greatest breadth of zygomata ... ..	13.6	14.2	14.4	13.8	13	14.6	14.25	14.1	13.7	13.7
Breadth from tragus to tragus ... ..	13.2	13.2	13.7	13.2	13.5	13.6	13.6	13.3	13	13.9
Least frontal breadth ... ..	12.2	12.7	12.3	11.8	12	12.7	12.3	12	11.8	12.6
Length of face, root of nose to lower border of chin...	11.2	12.2	11.05	11.3	12	10.4	11.35	12.2	12	11.3
Greatest length of head from chin up and backwards	25.4	25	25.4	25.9	25	25.5	25.2	25.5	25	24.5
Height of head from meatus auditorious to vertex ...	13.7	14.4	14.6	14.7	14	14.5	14.8	14.45	14.2	13.8
Distance from tragus to junction of nose and upper lip in middle line ... ..	12.2	12.2	12.2	12.4	12.2	12.2	12.4	11.6	12.4	12
Distance from tragus to smooth spot immediately above glabella ... ..	12.4	12.2	12.9	12.9	12.5	13	14	12.5	12.3	12.75
Distance from said spot to junction of nose and lip ...	8	7.8	8.1	8.6	6	7.8	8	7.9	8.05	7.8
Breadth of nose ... ..	4.6	4.1	4.0	4.0	...	4.4	4.4	...	...	3.7
Breadth of lips conjoined ... ..	1.5	2	2	2	...	...	...	...	...	1.9

## TATOOING.

In their tatooing the Ellice Islanders differed greatly, as the American Exploring Expedition remarked, from other branches of the Polynesian Race, both in their patterns and in the sharing of the custom by both sexes. As far as I can gather, the Micronesians, whose figures resemble more those of Funafuti, use short straight lines variously arranged in chevrons, diamonds, etc.,\* whereas the tatooing of the Polynesians, at least as shown by the Maories, seems rather to have been disposed in curves, employing spirals, scrolls, and circles.† Again, among the Polynesians it was the rule to tatoo men profusely, women slightly or not at all; a rule reversed by the Melanesians.‡ In Funafuti both sexes were of old equally tatooed.

Tatooing has long been an extinct art on Funafuti, and I was unable to procure any of the implements used in it. Only half-a-dozen, old, white-haired men and women survive who are thus decorated.

Of the Funafuti men, one of whom he figured, Wilkes wrote:—“They were tatooed differently from any heretofore seen, their arms being covered, from the shoulder to the wrist, with small curved figures or zig-zag lines. They had this tatooing also on the body, extending from the armpits to the waist, and down, until the whole body was encompassed in the same manner. No marks were observed on the face or legs, but on two of them were a few lines across the small of the back.” And of the Nukufetau men the same author continues:—“The tatooing was in great variety on the body, but in all, the arms were tatooed alike, for there it varied only in quantity. On the body it was frequently extended across the back and to the abdomen; and in many, the bodies and thighs were tatooed down as far as the knee. Many of the natives designated the figures as intended to represent pigeons.” On the men of Atafu, the same traveller saw, “many marks resembling fish on the arms, and a sort of triangle, together with figures of turtles, on the breast.” On Funafuti a native of Nanomea explained to me that certain tatoo marks on his arms represented *Holothuria*.

Only one woman from Nukufetau visited the “Peacock.” “Her arms were beautifully tatooed, of the same figure as the men, but the tatooing was continued down the leg in horizontal stripes an

\* For tatooing of the Caroline Islanders see Kubary—Journ. Godeffroy Museum, vii., 1875, p. 129; for the Marshalls, Kotezbue—Voyage of Discovery, ii., 1821, plate facing p. 63; for the Gilberts, Wilkes—*op. cit.*, v., p. 77; for Rarotonga, Williams—Native Missionary Enterprises, 1837, p. 503.

† Robley—Moko, or Maori tatooing, 1896.

‡ Turner—Samoa, 1884, p. 55.

inch and a half wide. This constituted a great difference from the Polynesians, for with them we have never before met with any females who were tattooed, excepting a few marks on the fingers and feet."

All I could learn of the manner of tattooing on Funafuti was that it was performed with a sharpened bird-bone tapped into the skin with a mallet; the pigment used was *Hernandia* nut reduced to charcoal, ground, and mixed with water. Except the pigment, it is probable that the mode of tattooing differed little from that in general use throughout the Pacific. The instruments and their use are thus described by a surgeon who endured a tattooing in the Marquesas:—"Eight or ten candlenuts are strung on a piece of reed, which is stuck in the ground, the upper one being lighted. An inverted section of a coconut is suspended over it. This condenses the smoke, which is very black, and when mixed with a little water, forms the marking-ink. The marginal lines of any figure are first marked out with a very small stick, the remainder is executed without a guide. The instruments for inserting the colouring matter into the skin are made of pieces of bone made flat, and serrated at one end, like either a comb or saw. The breadth of this end differs from the eighth of an inch to one inch, according to variety or minuteness of work, some having only two teeth, some a dozen. The other end is brought to a blunt point, and inserted at right angles into a small cane about six or eight inches long. The piece of cane is held between the finger and thumb of the left hand. The stick for beating this into the flesh is long or short, according to the fancy of the operator. The hitting of the stick is so very rapid that it resembles nothing that I know of more accurately than a trunk maker driving his nails."\*

The original pigment of the Polynesian seems to have been the soot of the candlenut fruit, *Aleurites triloba*; where the race wandered beyond the habitat of that tree, substitutes had to be found. In Funafuti *Hernandia* was used, and in New Zealand, Robley tells us that *Dammara* gum, *Podocarpus*, *Veronica*, and the vegetable caterpillar *Cordiceps larvarum* were employed.

In Funafuti both men and women were tattooed with the same pattern, which was peculiar to the atoll, and distinguished them from other islanders.

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\* Coulter—Adventures in the Pacific, 1845, p. 210. The operation is also described by Pritchard—Polynesian Reminiscences, p. 143; by Turner—Samoa, p. 88; by Polack—Manners and Customs of the New Zealanders, ii., 1840, pp. 42-51; by Robley—Moko, 1896, p. 56; by Guppy—Solomon Islands, 1887, p. 135; by Buckland—Journ. Anthropol. Inst., xvii., 1888, p. 318.

The subject I examined, Sami, an old white-haired man, was one of the few tattooed survivors. The tattooing (figs. 1, 2, and 3),

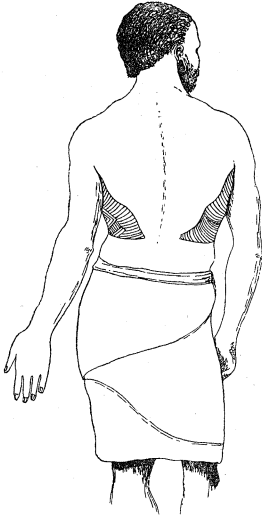


Fig. 1.

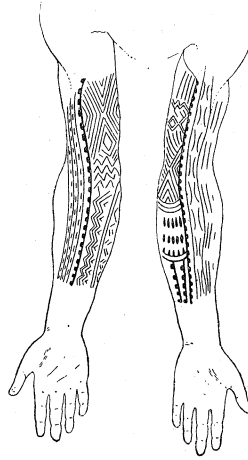


Fig. 2.

was confined to the smooth inner surfaces of the arms and the sides of the body, so that when he faced me "at attention" with the arms close to the trunk, his tattooing was scarcely visible. The arms were tattooed from three inches above the wrist to two inches below the armpit. On the back the tattooed areas extended in triangles from a point in the lumbar region, two inches from the spine, upwards to the armpit and horizontally round the waist. The pattern is carried under the arm to a point in front an inch beneath the nipple of the breast, then vertically downwards till a right angle is formed by the junction of the waist-line.

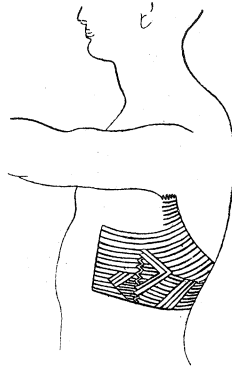


Fig. 3.

#### DRESS.

The old-fashioned kilt dress of Polynesia is still made and used on Funafuti. It is, however, like most native articles, in process of decadence, being only worn by the poorer people or by those

engaged in rough work meaning to save more valued clothes. The Tahitian "tiputa" has been imposed by the mission upon the women; both sexes wear the Fijian "lava lava" of European calico, another modern innovation. For state occasions the men wear shirt and trousers, and the women loose gowns in which they each appear awkward and uneasy. I did not learn that tappa cloth was made on the atoll.

#### THE TUKAI.

The ancient masculine costume, the "tukai," is well shown by the figure given by Wilkes\* of the Funafuti native wearing one, which is described as "a strip of fine matting made of the pandanus leaf, about eight inches wide and ten feet long, and fringed on each side." On Nukufetau the same Expedition saw pandanus mats "worn as a girdle of thick fringe, from eight inches to a foot broad, tied about the loins so as to cover in part the maro: to this they gave the name of 'takai'; the last was used as a wrapper about the body and legs."

Edge-Partington figures† this garment as from Rotumah, describing it as now obsolete.

Whereas the "titi" was simply tied round the waist, the tukai was first passed between the limbs and then around the body. From the accompanying sketch (Plate xiii.) of a man putting on his tukai it will be obvious that although this dress has acquired a secondary resemblance to the titi, it is really homologous with the T bandage formerly worn by the inhabitants of the neighbouring atolls of Atafu and Fakaafu.‡

The tukai primarily consists of a long narrow mat with a fringe of unwoven strands. Comparing the dress as it appeared to me on Funafuti with the drawings of Wilkes and Edge-Partington, it will be noticed that the fringe in the modern specimens I procured, has greatly broadened, while the total length of the dress has decreased to nearly half. I am unable from the specimens and illustrations at my disposal to trace all the gradations between the ordinary form of the T bandage and the tukai, but I feel convinced of their existence.

A specimen (fig. 4) of a highly ornate dance tukai, made for me on Funafuti, weighs two pounds four ounces, is six feet six

\* Wilkes—*op. cit.*, v., p. 41.

† Edge-Partington—*loc. cit.*, ii., pl. li., fig. 4.

‡ Wilkes—*loc. cit.*, v., plate facing p. 3 and p. 36; this loin cloth is also the ordinary masculine dress in the Solomons, as shown in Guppy's Solomon Islands, plate facing p. 102; and in Eastern British New Guinea, for example, Finsch—*Ethnological Atlas*, pl. xvi., and Lindt—*Picturesque New Guinea*, pl. xli.; the most reduced form of which known to me is the string "sihi" of the Motu, exemplified by Lindt, *op. cit.*, pl. xxxiv., the man on the left.

inches in total length, and when folded for use is eighteen inches in depth, it is made of the inner bark of the fau (*Hibiscus tiliaceus*)

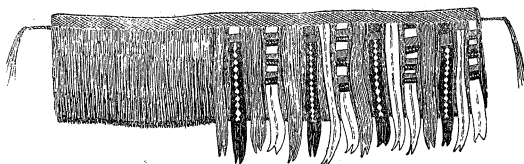


Fig. 4.

stained red with nonou (*Morinda citrifolia*). When unfolded, the centre band (fig. 5) is four and a half inches wide, woven closely of narrow strands; along the outside edge of the matting is a seam where additional fibres have been introduced to lengthen and thicken the dress: this latter feature is absent from an old, worn and unornamented tukai in the collection. At the inner corners the matting is produced into plaited strings for

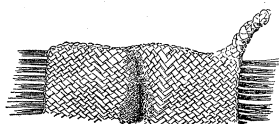


Fig. 5.

tying on the dress. The outer part of the fringe, that which is exposed when worn, is elaborately decorated with pandanus leaf ribbons arranged in four series of four, whose symmetry is only broken by the substitution of red for yellow in the penultimate one. Each ribbon is attached to the lower edge of the matting, is two feet long, two to two and a half inches wide, and forked at the tip. The right-hand streamer is for half its length decorated with three series of successive breadths of yellow, red, and black leaf, sewn on with European cotton. A row of five or six white tests of a Foraminifer (*Orbitolites complanata*, var. *laciniata*), is sewn on each black band. The second ribbon is yellow, with one red band atop; the third is black with a black and a red fold above, thence a series of confluent yellow diamonds extends to the edge of the fringe; the fourth is wholly red; the fifth repeats the first, and so on. This style of ornament recalls that of a Banks Island robe, figured by Edge-Partington.\* When the dress is put away these ribbons are carefully doubled up and tied to be out of harm's way. The native Wilkes figured was similarly decorated with pandanus ribbons, but as far as I can understand his description they were attached not to the tukai but to a separate belt. From Tahiti, Edge-Partington figures a like girdle with pendant tassels,† and in the New Hebrides there exists a similar overall dress with streamers five or six feet long.

\* Edge-Partington—*loc. cit.*, ii, pl. lxxxv., fig. 8.

† Edge-Partington—*loc. cit.*, i., pl. xxxv.

Another ornate tukai was decorated with less elaboration than the one described. In place of the discs of Foraminifera, white feathers were used.

A third tukai, intended perhaps for every-day wear, was of the same dimensions but quite plain.

#### THE TITI.

The "titi" or woman's dress appears in Funafuti in a form common alike to Melanesians and Polynesians, and extending over a wide area of the South Pacific. The name of it suggests a derivation from the Ti tree (*Cordyline*) whose handsome, elliptical leaves tied by their stalks in a belt are in some islands still used as a temporary or hastily made dress, and which may have been the earliest form of the garment.\*

In making the titi, a woman arranges her material, usually dressed leaves of pandanus or coconut palm, in convenient heaps. For the waist-band is selected a double cord of two or three ply coconut fibre, one end of which is made fast to a post of the hut the other being attached to the operator's waist. Sitting on the floor, the workwoman draws from the heap two handfuls of fibre, one she doubles over the cords, the other she knots across and

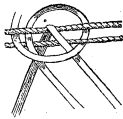


Fig. 6.



Fig. 7.

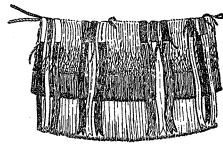


Fig. 8.

between them, as shown diagrammatically by fig. 6. A continuation of this process (fig. 7) completes the dress.† The leaves may afterwards be combed into finer strands by the "tosi." At one end the waist-band terminates in a loop, at the other in two strings with which it is tied at the side of the wearer.

Ornamental dance dresses differ from ordinary ones by the addition of extra flounces, etc. A specimen of the former now before me (fig. 8) weighs four pounds six ounces and measures three feet in length and twenty-one inches in depth.

\* Guppy—*loc. cit.*, p. 130; and Turner—*loc. cit.*, p. 118.

† Elsewhere in the Pacific other modes of knotting the fibres to the belt exist. That none of these have been described is a surprising instance of the superficialness of our knowledge of Polynesian Ethnology. Here lies a field for cultivation at once easy and prolific. A Papuan pattern, very distinct from that described in the text, will shortly be described in the Proc. Linn. Soc. N.S. Wales for 1897.

It is variegated by the intercalation of a brown coconut leaf flounce between two of white pandanus leaf, and is also adorned by four series of three coloured pandanus ribbons and decorated by the black feathers of the Frigate bird.

Plain dresses from the coconut leaf and from pandanus are also represented in the collection.

The only Ellice female seen by the American Exploring Expedition was a Nukufetau woman, who "wore a cincture around her waist, and a mat over her bosom. The cincture was made of pandanus leaves; this was fastened to a cord as a thick fringe, two feet in length, and extended to her knees."

When a dress has been laid aside for a while it is fumigated as described (*ante* p. 102) to rid it of noxious insects.

The grass rain-cloak of Japan has a general resemblance to the Polynesian titi. The Micronesian loom appeared unknown on Funafuti.

#### SANDALS.

A common article of apparel, widespread through the Pacific and still in daily use, is the sandal, on which scanty attention has been bestowed by Ethnologists.

Under the title of "Sandal used when fishing on a reef," Edge-Partington illustrates a type slightly differing from that we are approaching.\* His statement is confirmed by a veteran missionary, my friend the Rev. George Brown, LL.D., who tells me that the sandal is thus worn in Samoa.

The Rev. W. W. Gill writes of Mangaiia:—"At the top, the 'ungakoa,'† is protected against attack by a dense shield, whilst the circular edge of the cavity is as keen as the edge of a razor. This animal grows with the bed of coral, the long cavity becoming increasingly large. Young 'ungakoa,' like young oysters, are easily detached from the coral by means of a hammer. Children eat them raw, not forgetting a supply of cooked taro out of their tiny baskets. Hence the necessity of using sandals for the protection of the feet; woe betides the luckless wight who should tread with his entire weight upon one of these 'cobbler's awls.' Round pieces of flesh are in this way scooped out of the foot."‡

Another reference to this article occurs in a native address given by Gill:—"I now carefully turn my sandals, so that both sides may be equally worn, pick up my basket and fishing tackle, and go to the outer edge of the reef to angle."§ From Tahiti, the sandal is described by Ellis.||

\* *Loc. cit.*, i., pl. lxxvii., fig. 7, from Samoa; and pl. clxxvii., fig. 5, from Mortlock.

† Probably *Vermetus maximus*, Sowerby.

‡ Gill—*Savage Life in Polynesia*, 1880, p. 114.

§ Gill—*Life in the Southern Isles*, 1876, p. 145.

|| Ellis—*Polynesian Researches*, i., 1832, p. 143.



In the Museum at Honolulu there are deposited, "Sandals for walking on coral reefs," from Santa Cruz. The sandals of the ancient Hawaiian could hardly be called a regular part of the national costume, as they were only worn to protect the feet in journeys over the rough lava beds. The sandals, "malina," were simply braided cushions attached by cords, often of the same material, over the toes and around the ankle. Another allusion to these sandals terms them "kama waoke."\*

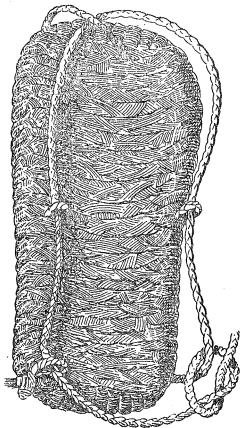


Fig. 9.

of the loops. The sandal is put on (fig. 10), by thrusting the second and third toes through the largest loop, applying the pad to the sole of the foot, drawing the cord tight and fastening it round the ankle. When fitted, both heel and toe overlap the pad. The construction of the Samoan sandal suggests that it is worn in a slightly different manner.

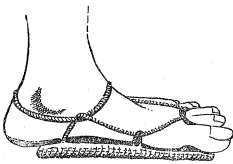


Fig. 10.

Webster, ascending Mauna Loa in 1851 observed that his native guide Sam, "always careful of number one, had provided himself with sandals made from the fibre of coconut husk" to save his feet from the sharp lava.†

The sandal "tukka" is still employed at Funafuti, whose fishermen are thus shod when wading on the reefs. A pair before me, of which one is represented by fig. 9, weighs five ounces. Each is eight inches long, four wide, and nearly one thick. Upon an oval, rope foundation, flat sinnet is woven under and over; at the toe end there is a long loop, at each side two short ones, and, at one corner of the heel end, a fourth loop. From the opposite corner of the heel end arises a flat cord thirty-nine inches long which is rove through each

The Japanese have a sandal closely resembling this, but the "kuditcha" shoes‡ of Australia are too distant in use and construction to require comparison.

\* Brigham—*loc. cit.*, pt. ii., p. 87; pt. iii., pp. 21 and 61.

† Webster—Last Cruise of the Wanderer, n.d., p. 18.

‡ R. Etheridge, Junr.—*Proc. Linn. Soc. N.S.W.* (2) ix., 1895, p. 544; Favenc—*The Moccasins of Silence*, n.d., frontispiece; Edge-Partington—*loc. cit.*, ii., pl. ccviii., figs. 7, 8.

## EYE-SHADE.

The skill of the Polynesians in plaiting has already been shown by various articles discussed in this essay, and this aptitude is further exemplified by their eye-shades. In the case of this object I am beset by the usual difficulty encountered in the study of the lesser possessions of the Polynesians. Consequent on few writers having descended to the notice of such apparent trifles, there are but scanty records available of variation or of geographical distribution.

The Polynesian eye-shade appears to have been adopted by the Melanesians, for Edge-Partington pictures it from Papua,\* and it is frequently recorded from the Solomons. Dr. H. B. Guppy observed that "sunshades in the form of a peak of plaited grass bound to the forehead and projecting over the eyes are occasionally worn by the natives of Bougainville Straits, whilst fishing in canoes, in order to protect their eyes from the sun's glare on the water. In Ugi, these sun-shades are sometimes worn on gala days. They did not, however, appear to be in constant use in any part of the group which we visited." This account is illustrated by a photograph of "Men of Ugi wearing sun-shades."† Woodford pictures a Rubiana native wearing one.‡ From Savo there is a specimen in the Australian Museum, and Edge-Partington figures others from Ysabel and San Christoval.§

Wilkes shows some of the individuals of a group of Fakaafu natives wearing the eye-shade, and at Atafu the men wore "on their head a piece, made in some cases of matting, in others of tortoiseshell, and occasionally this ornament resembled an eye-shade, or the front of a cap, to protect the face from the sun."|| A sketch by Webber, in the British Museum, is reproduced by Edge-Partington, showing Tahitian women making bark cloth, two of the figures in which are wearing sun-shades. "A sun-shade from Tahiti made of finely plaited coconut fibre" is also drawn separately.¶ "Here, says Ellis, it is called 'taupoo,' or 'taumata.'\*\*"

The eye-shade of Funafuti, "mataili," was only used when line fishing from a canoe. It was plaited indifferently from coconut palm frond or pandanus leaf, was thrown away at the end of the day's work and made anew as wanted. The specimens that I have examined of the eye-shades of the Solomon natives are all of coconut frond, they differ from the Ellice Island pattern in having

\* Edge-Partington—*loc. cit.*, i., pl. cccvii., fig. 6 and pl. cccxxv., fig. 4; see also: Ratzel—*The History of Mankind* (English ed.) i., 1896, plate facing p. 214, fig. 15, and p. 224.

† Guppy—*loc. cit.*, p. 139, and pl. facing p. 102.

‡ Woodford—*A Naturalist among the Head-hunters*, 1890, p. 150.

§ Edge-Partington—*loc. cit.*, i., pl. cci., fig. 4, and ii., pl. cvii., figs. 7, 8.

|| Wilkes—*loc. cit.*, v., pp. 6 and 36.

¶ Edge-Partington—*loc. cit.*, i., pl. xxxi. and pl. xxxiii., fig. 5.

\*\* Ellis—*loc. cit.*, ii., p. 399.

the loop, which passes round the back of the head, made in one piece instead of being in two strings knotted together; also in having the front margin projecting into horns at the corners, which Mr. N. Hardy suggests to me are ornamental representations of the wings of Frigate Birds. On some of the other atolls of the group, Mr. O'Brien tells me that small pouches for the reception of fish-hooks, etc., were made on the under surface of the flap. On Funafuti the natives had a trick of thrusting such sundries as a stick of trade tobacco into the plaits of their eye-shades.

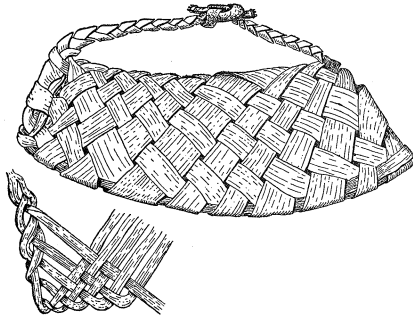


Fig. 11.

Two specimens of the eye-shade from Funafuti present themselves for description. Both are of woven pandanus leaf; the larger shown in fig. 11 is fifteen inches ounce and a quarter, by six, and weighs an it is coarsely plaited, of about nine, broad, diagonal pandanus strands, an inch or an inch and a half wide; from the inner margin the strands are carried in a band

and knotted at the back of the head, so as to form a loop about a foot long. The smaller example is about twelve by four and a half inches, of finer pandanus strands, there being about thirty rows of quarter inch plaits; the weight of it is half an ounce. The smaller figure is a sketch, taken on the spot, of a palm frond tip which I saw a native in process of weaving into an eye-shade.

#### ORNAMENTS.

Trinkets for personal adornment, except those of European pattern, are now, through missionary influence, disused on Funafuti. A band of small and polished Nautilus shells, somewhat like that Edge-Partington figures from Samoa,\* was purchased by a member of the Expedition. As the Pearly Nautilus does not occur alive on the atoll, and rarely if ever drifts there, I am not satisfied of the local origin of that ornament.

On Nukulailai I found shell necklaces in fashion. One I purchased called "pouli," weighs an ounce and a half and measures sixteen inches in length, and was composed of a hundred and seven bleached and yellow shells of *Melampus luteus*, each pierced near its anterior extremity, and strung either backwards

\* Edge-Partington—*loc. cit.*, pl. lxxxvi., fig. 2.

or forwards, alternately left and right, on a cord plaited of four strands (fig. 12). In estimating the beauty of such a necklace, it should be remembered that it is designed not to contrast with a white skin, where its effect would be displeasing, but against a brown one, where it is in chromatic harmony.



Fig. 12.

Models were made for me on Funafuti of a pair of dance ornaments, "lilima," (fig. 13) such as were worn in "the old days." Each

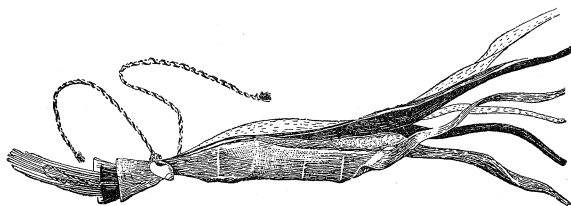


Fig. 13.

armlet is composed of three pandanus leaf ribbons, two feet long, super-imposed one upon another, except above, where the lower projects beyond the upper. The uppermost is reddened with nonou, the second blackened with tar, and the third retains its natural yellow. The red leaf is crinkled\* with transverse creases an inch and a half apart. Near the upper end the leaves are gathered with a bow of ornamental cord, on which is strung a button of white shell, *Natica mamilla*; the ribbons are further surmounted by a tuft of palm pinnules upon which is arranged a fold of the bow of the cord. The cord is segmented black and yellow, consisting of a strand of human hair laid up with a strand of bark thread.† The whole has a tasteful effect. It was worn, said the maker, by tying the strings round the biceps of the arm.

Head-dresses were formerly made of the Frigate bird plumes,‡ but of these I failed to procure either specimens or models. A pandanus leaf head-dress is figured by Wilkes, the Funafuti native wearing it also sports an ankle-ring.§

On Nukufetau the American Exploring Expedition observed a coconut leaflet tied round the necks of some men (*ante* p. 27). On Fotuna this was a mark of rank.|| An illustration of a king of Fakaafu shows him thus adorned.¶

\* On Ponape, the dress of chiefs is pandanus leaves *crimped*. Brigham—*loc. cit.*, iii., p. 49.

† This kind of cord is used in some of the New Ireland dance masks in the Australian Museum.

‡ Gill—*Jottings from the Pacific*, 1885, p. 17.

§ Wilkes—*loc. cit.*, p. 41.

|| *Journ. Polyn. Soc.*, i., pp. 41, 42.

¶ *Journ. Anthropol. Inst.*, xxi., 1892, pl. iii., fig. 1.

## WEAPONS AND TOOLS.

## OFFENSIVE WEAPONS.

As previously stated on p. 45, the Ellice Group has enjoyed peace so long that not only have the making and handling of weapons fallen into disuse, but all instruments of war have now disappeared. No exact account of these seems to have been preserved in literature. Shark tooth knives were described to me by old men and are recorded by early travellers. Figures of such in the Ethnological Album\* are referred with doubt by Edge-Partington to the Ellice Group.

In the absence of extinct originals, models locally made are of some interest. An aged, white-haired, and tattooed native of Funafuti made for me such of two weapons as previously used by his tribe:—

A missile, "apa," (fig. 14) is a smooth, spindle-shaped piece of hard, heavy wood, probably *Pemphis*, sharply pointed at each end. It weighs one pound five ounces, and measures two feet in length and one and three quarter inches in greatest diameter. In battle it was thrown at an enemy, and was probably capable of inflicting an ugly wound upon a naked foe. The Tahitians had "the tiora, a polished dart about three feet long, cast from the hand generally in the naval engagements, but occasionally on land."† From the Gilbert Group, Edge-Partington figures a missile club, "goramaton," similar to this.‡ An Australian weapon, "konnung,"§ closely resembles this pattern in use and appearance. Indeed so simple an article might be expected to independently recur in different quarters of the world.

The model of the sword-club, "lakautaua,"|| (fig. 15) is roughly made, but probably presents the general appearance of the ancient weapon. A narrow lanceolate blade, truncate at the extremity, tapers to a rounded handle. From a central longitudinal keel, where the thickness is an inch and a quarter, the sides thin down to a square edge a quarter of an inch thick. At half the weapon's length, a notch half an inch deep is cut on each side. From a point an inch



Fig. 14.



Fig. 15.

\* *Loc. cit.*, i., pl. xxxvii., figs. 6-11; pl. xxxviii., figs. 1-5; Additional Notes; ii., pl. lxxxix., fig. 8.

† Ellis—*op. cit.*, i., p. 298. ‡ *Id.*, *loc. cit.*, ii., pl. xev., fig. 12.

§ Brough Smyth—*loc. cit.*, p. 302, fig. 64; and R. Etheridge, Junr.—Macleay Memorial Volume, 1893, p. 240.

|| *Cf.* Wilkes—*loc. cit.*, v., p. 16.

distant from these notches to the distal end the blade is ornamented on both sides and faces by twenty shallow grooves, separated by interstices of equal breadth, so alternating with those of the opposite surface as to serrate the edge of the weapon. These grooves perhaps represent a degeneration from the toothed edge of certain Samoan clubs.\* The use of these teeth and notches probably was to catch and snap the spears of an enemy.

The lakautaua is of hard wood, probably *Pemphis*; it weighs one pound three ounces, and measures one foot seven inches in length, and two and a half inches in breadth.

Among the Penrhyn Islanders, Lamont remarked that:—"The long, light, paddle-shaped club used by the women is called 'coerarai,' and is used in battle principally for breaking the spears of the men of the opposite party."†

The rough sketch and brief notice do not admit of satisfactory identification, but a species of lakautaua is suggested to me by a drawing‡ in the Ethnological Album, described as a "flat wooden fan, stained black in places: Tokelau Island, Union Group." Should "fan" be a grimly ironical misnomer for a messenger of death, the black stains may be those of human blood. The probable inaccuracy of the ethnological statement is countenanced by the geographical confusion of this quotation.

A club figured by Edge-Partington§ as from Fiji, has several features in common with the Funafuti model, such as the proportion of handle to blade, and the raised central keel and distal truncation of the latter. Perhaps one of a group of articles figured by Wilkes from the Kingsmills stands for another.||

#### ADZES AND AXES.

In 1773 Captain Cook found iron already in the hands of the South Sea Islanders. The process, then commencing, of replacing stone, shell, and bone with metal is now completed. For there is not an island, however remote, in Polynesia where non-metallic adzes are any longer used, only the remembrance of them existing in the minds of the oldest natives.

The collection of Ellice adzes and axes falls into two divisions, the ancient, non-metallic and extinct types represented by models, and those now in use in which a metal blade has been adapted to the ancient tool. Stone blades being obviously unattainable, the models of ancient adzes were set with shell ones. In every case the shell was *Tridacna*, though it is probable that in Funafuti, as elsewhere in the Pacific, other mollusca such as *Mitra episcopalis*, or *Terebra maculata*, would sometimes furnish adze-heads.

\* Such as Edge-Partington—*loc. cit.*, i., pl. lxxiv., fig. 2.

† Lamont—*Wild Life among the Pacific Islanders*, 1867, p. 133.

‡ Edge-Partington—*loc. cit.*, ii., pl. xevi., fig. 3.

§ *Loc. cit.*, ii., pl. liv., fig. 1.

|| Wilkes—*loc. cit.*, v., p. 79, the object lying furthest left.

The *Tridacna* shell, particularly the thick part near the hinge, was in former times highly and widely esteemed for this purpose, as is recorded by Keate from the Pelews,\* by Finsch from the Carolines, Marshalls, and Gilberts,† by Guppy from the Solomons,‡ by Dixon from Malden Island,§ by Wilkes from the Paumotus,|| by Moseley from the Admiralties;¶ and from Nanomea in the Ellice itself Finsch obtained a specimen of a *Tridacna* axe.

It would hardly have been anticipated that natives, like the Solomon and Pelew Islanders, in the possession of hard volcanic rock would have thus used this material, but Finsch repeatedly remarks that the greater toughness of the shell gives it an advantage over the more brittle stone.\*\*

In the Carolines the same author found the *Tridacna* blades to assume various shapes, of which he figures a broad deltoid and a narrow chisel form.†† Some of these attain an immense size, reaching twenty inches in length and ten pounds in weight; such, he says, were common property.

Describing relics of the race who formerly inhabited Malden Island, Mr. W. A. Dixon writes:—"In the grave was a hatchet head with polished edge made from the shell of a tridacna. . . In many places there were numerous axe heads chipped roughly out of tridacna shells. These are tolerably easily made, the shell being first broken transversely, when a blow on the fractured surface breaks out from the interior of the shell an adze-shaped piece which seems to me to be the pattern on which many of the South Sea stone adzes are formed."‡‡

These tools are thus described by Keate, from the Pelews:—"Their hatchets were not unlike those of the South Sea Islands, the blade part being made of the strongest part of the large *Kima Cockle*, ground to a sharp edge. . . Uncouth as their hatchets might appear to our people, it was a matter of surprise to observe in how little a time the natives were able to fell a tree with them, though not without breaking several."§§

A glance at a stone adze in the exhibition case of a museum might not impress a spectator with a high opinion of its utility

\* Keate—An Account of the Pelew Islands, 1788, p. 312.

† Finsch—Ann. K. K. Naturhist. Hofmus., viii., 1893, p. 65.

‡ Guppy—The Solomon Islands, 1887, p. 76.

§ Dixon—Journ. Roy. Soc. N.S.W., ix., 1877 (1878) p. 175.

|| Wilkes—*op. cit.*

¶ Challenger Reports—Narrative, i., pt. ii., 1885, p. 716.

\*\* "In Lepers Island, the stone adzes were called *talai maeto*, black clam shell, a name now given to iron; the native adze was evidently at first of shell, *talai*, and when stone was used the old name was retained." Codrington—The Melanesians, 1891, p. 314.

†† Finsch—*op. cit.*, p. 214, figs. 36-38.

‡‡ Dixon—*op. cit.*

§§ Keate—*op. cit.*, p. 312.

but on the first occasion on which I saw a stone adze used, my previous ideas on this subject were promptly dissipated. Passing a canoe-builder at work in Kerepunu, British New Guinea, I observed him hewing with a steel tomahawk while beside him lay a rotary stone adze. Being requested to show how the latter was employed, the native obligingly laid aside his European tool and resumed the Papuan one. Three years daily toil in the Queensland bush with an American axe had made me familiar with its use, and it was with the critical eye of a fellow-craftsman that I watched the Papuan axeman. I expected to see him chop with short, light strokes, but with astonishment I saw him plant his feet firmly, swing his adze over his left shoulder at full arm's length, sliding the left hand down the handle in doing so, and then, rising slightly on his toes, bring it down with all the force of every muscle in his arms, back, and legs. After freeing the chip, the adze went up and round and down, and down again, in the most workmanlike style. Under these blows a rain of chips, long, broad chips, sprang from the adze blade over the heads of the bystanders. The aim proved equal to the force, as a strip of timber disappeared inch by inch under well directed even strokes.

The model on which is based fig. 16, has a handle sixteen inches long, the shape of that of the ordinary plane iron adze. A short limb, six inches in length, departs from the handle at an angle of about thirty-five degrees, on the outer distal side of which the adze head is let in. Flat sinnet, interlaced as shown in the figure, binds this on firmly. The head itself is a rough deltoid chip, three inches long, two broad, and half an inch thick, from the valve of *Tridacna squamosa*, the inner face of the valve being applied to the wood, while upon the outer the ridges, furrows, and scales can still be distinguished; a blunt chisel edge is produced by grinding the outer surface. This tool was known in Funafuti as the "toki fasua" (*lit.* Tridacna Adze).

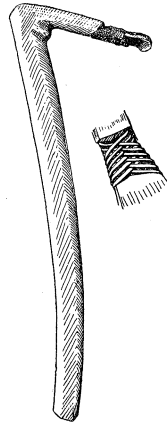


Fig. 16.

Another extinct type, reproduced in models for me by the natives, was the "toki fonu," or Turtle Axe. It is exceptional to find an axe (as opposed to an adze) in Polynesia.\* The Tongans could only express an axe to Mariner by circumlocution as, "togi fucca anga gehe—an adze having the blade differently turned with respect to the handle." The range of this type is probably inconsiderable, as other lands

\* In Papua the ceremonial tools seem all axes, not adzes. Finsch figures a hoop-iron axe from the Dentrecasteaux;—Ethnol. Atlas, pl. i., fig. 8.



yield superior material in abundance, and it may fairly be assumed to be restricted to the low coral islands of the Central Pacific. Edge-Partington cites\* these axes from Nukulailai, Nieuve, the Gilberts, and New Caledonia, the last I suspect to be erroneous. They were observed by Whitmee (*ante*, p. 45) on Vaitupu. The Australian Museum possess a series from Mortlock Island. A group of these turtle axes is published by the former author under the erroneous heading of "Bone War Axes."† As a matter of theory these articles seem too light, weak, and clumsy, to serve a warrior; the feel and balance of a real weapon, of however humble an origin, is unmistakable and when gripped by even the hand of an ethnological student can stir a man's blood with magic invitation. As a matter of fact I have Mr. J. O'Brien's assurance that these axes were kitchen utensils, used by the women to split coconuts and chop the soft pandanus boughs. It answers, in fact, to the wooden adze used in Tahiti for splitting breadfruit.‡ Turtle axes from Matty Island differ from other known forms in having the blade pinned instead of lashed to the handle.§

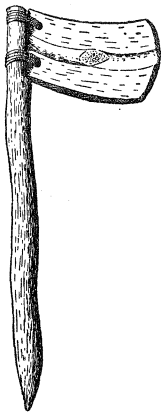


Fig. 17.

The model represented in fig. 17, has for handle a round, fairly straight stick, sixteen inches long and an inch thick. At the distal end a groove three and a half inches long and a quarter of an inch deep is cut to receive the head. This is a trapezoid piece of turtle (*Chelone midas*) carapace, six and a half inches long and, across the blade, four broad, which is ground on its inner surface to a chisel edge; the proximal end is pierced with two circular holes, through which pass the strands of sinnet that firmly bind the head to the handle.

The ordinary form of adze, which every man owns and reckons as his most useful possession, is the plane-iron adze, the "toki" of Funafuti, a word which reappears as "togi" in Tonga, and "tosi" in Penrhyn Island, etc. The plane-iron adze is the direct descendant of the *Tridacna* adze of ancient days, being used and mounted

\* Edge-Partington—*loc. cit.*, i., pls. xiv., cxxxii.; ii., pl. xciv.

† Again (Journ. Anthropol. Inst., xxv.) a turtle-shell axe from Matty Island is described as used in battle. The intrinsic evidence of the description is not convincing, since an edge which would not slice cheese is said to slice flesh. This Matty Island axe seems to me designed for lopping pandanus fruit from the tree. In this paper the race inhabiting Matty Island is not classified. A comparison of the articles described there with those of Funafuti forcibly suggests to me a Polynesian source.

‡ Ellis—*Polynesian Researches*, i., 1832, p. 177, fig.

§ Edge-Partington—Journ. Anthropol. Inst., xxv., 1896, pl. xxiv., figs. 11, 12.

similarly. This tool plays the part in Polynesia which the tomahawk takes in Australia; in a native's hand it does duty for half the tools in a carpenter's kit, a keen edge is always kept on the blade, which is used with skill, speed and accuracy. The Funafuti natives when carrying an adze usually prefer rather to hook it over the shoulder than to grasp it in the hand. I observed the same trick in British New Guinea and in the Dentrecasteaux Archipelago. Keate figures a native of the Pelew Islands in this posture,\* and Moseley another from the Admiralty Islands.†

The original of fig. 18 was a parting gift from my Polynesian friend its owner, whose name is carved upon the handle. In weight it is fourteen ounces, and in length seventeen and a half inches. The handle, the shape of the Arabic numeral 7, is highly polished by hand friction, it differs from that of the Tridacna adze only in the blade being let in for a greater length, but a quarter of the length of the iron projecting beyond the wood. This is an ordinary European plane-iron sunk in a bevel, and is attached by interlaced sinnet as described in the case of the Tridacna axe. From the Admiralty Islands an almost identical specimen was procured by the "Challenger" Expedition.‡

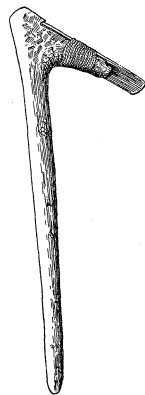


Fig. 18.

The Rotatory Adze is constructed with such mechanical ingenuity that it is difficult to believe it to be an indigenous possession of a people so low in the state of civilisation as the subject of our study.§ From negative evidence I judge that the Rotatory Adze formed no part of the Polynesian heritage, but that its presence in Funafuti is due to that intercourse with the Gilberts which conferred so many benefits upon the southern archipelago.||

For a contrivance of so much interest the Rotatory Adze appears to have attracted scanty notice in ethnological literature. The mechanical principle of this tool has in the Pacific developed three expressions.

\* Keate—*op. cit.*, plate facing p. 55.

† Moseley—*Journ. Anthropol. Inst.*, vi., 1877, pl. xxiii., fig. 2.

‡ Moseley—*Challenger Reports—Narrative*, i., pt. ii., 1885, p. 716, fig. 247.

§ In Java a reversible axe-adze was used, the head being bound on with raw hide, and in Central Africa another reversible axe-adze was employed.

|| But the following sentence in a description of Hawaiian tools indicates apparently that the Rotatory Adze existed there. "In a form much used for the interior work of a canoe, the stone is so mounted as to turn to one side or the other, thus becoming, as needed, a right or left-hand adze."—*Cat. Bernice Pauahi Bishop Museum*, pt. i., 1892, p. 43.

(I.) The Western Papuans make a club-shaped adze-handle, through a perforation in the thick end of which is thrust the mounted stone adze-head, the latter rotating as required in the perforation.\* The Australian Museum possess a series of this pattern, collected by the Expedition of the Geographical Society of Australasia to the Fly River, and also an instance from Hermit Island to the west of the Admiralty Islands.†

(II.) The second type, possessed by the Eastern Papuans, has been described by Finsch,‡ who states that it is called "lachela" on the South Coast of British New Guinea, and "ki," or "kis" in Finschhafen, German New Guinea. Here the stone blade is firmly attached to a wooden cone, the wood and stone together constituting the moveable adze-head, the upper surface of the short limb of the adze-handle is sloped and hollowed to receive the cone of the adze-head, and both cone and limb are embraced in a wide band or sleeve of woven rattan. When it is desired to rotate the blade, the butt of the adze head, which usually projects beyond the adze-handle, is tapped and slides forward, the adze-head is then turned to the required angle and thrust back into the rattan sleeve. Every subsequent blow, by driving the cone along and up the wedge of the short arm of the handle, tends to jamb the adze-head tighter into the rattan sleeve.§

(III.) To the third expression, employed by the Micronesians, belongs the Funafuti tool, which invited attention to the foregoing; the only reference to this, known to me in literature, is more than a century old. Keate,|| writing of the Pelew Islands, remarks that, "they had also another kind of hatchet, which was formed in a manner to move round in a groove, that the edge might act longitudinally, or transversely, by which it would serve as a hatchet, or an adze, as occasion required." He also gives an elaborate engraving of this tool with the legend, "A moveable Hatchet." On comparing Keate's picture and account with Finsch's sketch of a Tridacna adze from Kusaie (Carolines)¶ I am

\* This type is figured by Jukes—Voyage of the "Fly," i., 1847, plate facing p. 274; by D'Albortis—New Guinea, ii., 1880, figs. 6 and 11 of plate facing p. 378; by Finsch—Ethnological Atlas, pl. i., fig. 5; and by Edge-Partington—*loc. cit.*, i., pl. ccxcviii., fig. 1.

† Moseley figures and describes—*loc. cit.*, ii., p. 717, fig. 249,—an axe from the Admiralty Islands, of which the blade was "merely jammed in a slot cut in a club-like billet of hard wood near its end." Other relations between the Fly River and Northern Papuans are referred to by Haddon—Cunningham Memoirs, x., 1894, p. 84.

‡ Finsch—*op. cit.*, iii., 1888, p. 328, fig. 36; vi., 1891, p. 71; also Ethnol. Atlas, pl. i., figs. 4, 7.

§ In an unfigured and undescribed type from New Britain, the shorter limb of the adze-handle tapers to a point and is received by a socket of wood and cane attached to the blade.

|| Keate—An Account of the Pelew Islands, 1788, p. 312, pl. ii., fig. 3.

¶ Finsch—*op. cit.*, viii., 1893, p. 215, fig. 39.

tempted to believe that the German traveller had before him a Rotatory Adze, though the distinguishing feature of it escaped his observation. My reasons for this opinion are that the shell blade is shown not directly connected with the handle, but inserted into a separate holder which is in turn fastened to the handle; and further that in the immovable adzes the method, which I have already described, of lashing the blade to the handle, is quite different, whereas the mode and lashing of the Caroline adze is exactly that of the Pelew Rotatory Adze, namely one series of backwardly and another of forwardly directed cords, arising from opposite sides of the handle and meeting above. This arrangement is seen again in an axe-adze Finsch figures from Guap, near D'Urville Island, German New Guinea.\* The drawings of Edge-Partington are not sufficiently elaborated to permit much appeal to detail, but the points just discussed suggest to me that an adze, figured as from Pitcairn Island,† is probably a Rotatory Adze. Recollecting that the "Bounty" mutineers found Pitcairn uninhabited, I regard this locality with suspicion. Others figured as from the Carolines, Santa Cruz, New Guinea and New Zealand (!)‡ may perhaps belong to the group under consideration, as may that shown on p. 313 of Codrington's Melanesians.

If it be accepted, as it generally is, that the Plane-iron Adze is the direct descendant of the Stone or Shell Adze, then it cannot be denied that the Rotatory Adze I here figure is derived by parallel descent from an adze like that figured by Keate. Various aspects of a specimen of the Rotatory Adze now in common use in Funafuti, where it is called "atupa," are shown by fig. 19. The handle of the atupa differs from that of the toki, in that the short arm is produced so as to transform the T into an oblique and unsymmetrical T. The example selected for illustration weighs one pound, six ounces; the handle is two feet long and the head half as much. In this particular instance the cutting edge is a European hoe-blade; in another, part of an iron door-hinge has served, and probably scrap-iron in almost any form

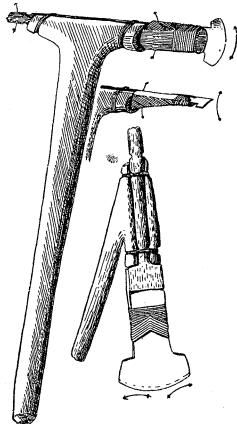


Fig. 19.

\* Finsch—Ethnol. Atlas, pl. 1, fig. 7.

† Edge-Partington—*loc. cit.*, ii., pl. xv., fig. 5.

‡ *Loc. cit.*, ii., pl. xciii., fig. 3; i., pl. ccc., fig. 3; pl. cccxxx., fig. 3; pl. clxii., fig. 4.

would be utilised. The iron is let into and lashed to a spade-shaped holder in precisely the fashion in which the plane-iron edge is fastened to its adze-handle. This wooden holder is about ten inches long, consisting of a round rotating shaft about six inches long and a wedge-head, the latter being four inches long, two broad, and at the thick end an inch and a quarter deep. The base of the wedge grinds against the truncated arm of the handle which receives the shock of the blow, while the shaft is nearly buried in a deep groove along the T head of the handle. Both handle and holder are cross-furrowed by two deeply incised ring-grooves, one before and one behind, while vestiges of a third are apparent. Stout sinnet bindings occupy these grooves and keep the holder in its position in the groove of the handle.

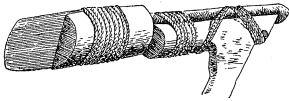


Fig. 20.

Another, and as Keate's figure suggests, probably archaic, method of lashing the holder to the handle is shown (fig. 20) by a specimen I sketched, but could not obtain, on Funafuti.

#### PUMP DRILL.\*

Perhaps the only existing people who do not practise perforation by drilling are the Australian Aborigines, who however incidentally drilled holes in the process of making fire. The Polynesians are much more advanced.

The Pump Drill of the West Pacific never fails to elicit expressions of surprise and admiration from those who first see it used by the natives. So attractive a subject has naturally received due attention from travellers, and as several good figures of it have already appeared, I need not here burden literature with more.

The pump drill seems to have been an evolution from the simple shaft drill, from which it arose by easy and natural improvements. The simple shaft drill, as the older and simpler form, was wider spread in space consequent on its superior antiquity allowing it the greater chance of passing from people to people to remoter limits. When European civilisation invaded the Pacific and commenced to deaden the progress of native manners and customs, the pump drill was probably overtaking and replacing the simple shaft drill on the periphery of an out-rippling circle.

To trace the path of either form would be to unravel the vexed question of the origin of the Pacific races. "The rotatory drill," says Brigham, "and the kupaaikée adze are both Papuan

\* For an account of the pump drill beyond the geographical limits of the present article, see J. D. McGuire—A Study of the primitive methods of Drilling—Report of the U.S. National Museum, 1894, (1896) p. 733.

inventions now spread through the Pacific.”\* If so they must have been transmitted to Hawaii by the Micronesians. A possible source of the ancient, simple, shaft drill of the Pacific, is Japan, where Morse thus describes its use:—“For drilling holes, a very long-handled awl is used. The carpenter, seizing the handle at the end, between the palms of his hands, and moving his hands rapidly back and forth, pushing down at the same time, the awl is made rapidly to rotate back and forth; as his hands gradually slip down on the handle, he quickly seizes it at the upper end again, continuing the motion as before.”† Such a drill is introduced into a scene in the island of Rawak, Dutch New Guinea.‡ Cook noticed this simpler form of drill from Tahiti, and he observed awls armed with sharks’ teeth used by the Tongans and the Maories.§ The Maori greenstone *meris* are said to have been drilled with a weighted strap drill. “To drill the hole for the thong in the handle . . . pieces of sharp flint are set in the end of a split stick, being lashed in very neatly. The stick is about fifteen or eighteen inches long, and is to become the spindle of a large teetotum drill. For the circular plate of this instrument the hardened intervertebral cartilage of a whale is taken. A hole is made through, and the stick firmly and accurately fixed in it. Two strings are then attached to the upper end of the stick, and by pulling them a rapid rotatory motion is given to the drill. When an indentation is once made in the *pounamu* the work is easy. As each flint becomes blunted it is replaced by another.”|| From New Caledonia I have had a description of a stick drill on a large scale, used for making the nephrite ceremonial axes; to this a stone is slung, performing when set spinning, the office of a fly-wheel. The shaft drill survived till lately on Erromanga, New Hebrides, whence the Rev. H. A. Robertson procured models, now in the Australian Museum. Fire-sticks and the long spines of *Echini* supplied the Fijian’s boring apparatus.

The structure and use of the pump drill is thus described by Dr. Turner:—“Take a piece of wood, eighteen inches long, twice the thickness of a cedar pencil. Fasten with a strong thread a fine pointed nail, or a sail needle, to the end of this sort of spindle. Get a thick piece of wood, about the size of what is called in England a ‘hot cross bun,’ and in Scotland a ‘cookie,’ bore a hole in the centre of it, run the spindle through it, and wedge it fast about the middle of the spindle. At the top of the spindle fasten

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\* Brigham—*loc. cit.*, pt iii., p. 31.

† Morse—*Japanese Homes*, 1888, p. 40.

‡ *Voy. Uranie et Physicienne*, 1829, pl. 46.

§ Cook—*First Voyage*, ii., 1773, p. 219; *Last Voyage*, i., 1785, pp. 160 and 395.

|| Chapman—*Trans. N. Z. Inst.*, xxiv., 1891 (1892) p. 499. Another type is figured, *loc. cit.*, pl. xxviii.

two strings, each nine inches long, to the end of these strings attach the ends of a common cedar pencil, forming a triangle with a wooden base and side strings. Stand up the machine with your left hand, place the iron point where you wish to bore a hole, and steady the spindle with your left hand. Take hold of the pencil handle of the upper triangle, twirl round the spindle with your left hand, which will coil on the strings at the top to the spindle, pull down the pencil handle quickly, and then the machine will spin round. Work the handle in this way up and down, like a pump, the cord will alternately run off and on to the spindle, and the machine will continue to whirl round, first one way and then the other, until the pearl shell or whatever it may be, is perforated.”\*

Perhaps the earliest account we have of the pump drill of the Pacific is the excellent engraving and description of one procured from Fakaafu by the American Expedition on the occasion of their discovery of that island.† Turner fully describes this drill and its use in Samoa,‡ and a Samoan example is figured by Edge-Partington.§ At Treasury Island, Solomons, Dr. Guppy saw Mule, the chief, using a pump drill for “piercing the holes for the rattan-like thongs in the planks of his canoe.”|| Edge-Partington supplies an illustration of a pump drill with a stone point and a turtle fly-wheel from Malayta, Solomons;¶ and Codrington describes certain disks as “drilled with a pump drill, in Florida ‘puputa,’ in San Christoval ‘nono.’”\*\* Its existence in British New Guinea is attested by D’Albertis, who figures one from Naiabui;†† by Stone, who figures and describes another from Port Moresby;‡‡ and by Edge-Partington, who figures a third from Kerepunu;§§ the two latter are peculiar in the substitution of a bar for a fly-wheel. In 1890, I observed a native in the village of Toulon Island engaged in making beads from *Strombus* shells with the aid of a pump drill. “The rotatory drill was known to the Hawaiians; before the advent of iron the point of a Terebra shell served for borer, but in modern times a triangular file was generally used.”|||

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\* Turner—Samoa, 1884, p. 169.

† Wilkes—*loc. cit.*, v., p. 18, fig.

‡ Turner—*loc. cit.*, p. 169.

§ Edge-Partington—*loc. cit.*, i., pl. lxxvii., fig. 1.

|| Guppy—*loc. cit.*, p. 76.

¶ Edge-Partington—*loc. cit.*, i., pl. cci., fig. 3.

\*\* Codrington—The Melanesians, 1891, p. 325.

†† D’Albertis—*loc. cit.*, pl. facing p. 378, fig. 19.

‡‡ Stone—A Few Months in New Guinea, 1883, p. 72, fig.

§§ Edge-Partington—*loc. cit.*, ii., pl. 174, fig. 4.

||| Brigham—*loc. cit.*, pt. ii., p. 44; pt. iii., p. 31.

No drills, I believe, existed on Funafuti at the date of our arrival. The natives were, however, well acquainted with the tool and described them to me as formerly in use pointed with *Terebra maculata* and *Mitra episcopalis*; a clumsy model of one, pointed with a fragment of *Pteroceras*, was made on the island for one of our party. On Fakaafu, Lister saw a drill pointed with a sea urchin's tooth. On the neighbouring atoll of Nukulailai I was able to secure a specimen in actual use. Here it was called "milli," and was chiefly employed in making pearl-shell fish-hooks. This specimen weighs six and a half ounces, measures twenty-one inches in total length, is fitted half-way with a fly-wheel four and a half inches in diameter and three-quarters of an inch thick of European or American deal, from one end a rod a foot long is swung from nine inch long sinnet cords, and to the other end is lashed a pointed, steel, triangular, saw-file.\*

#### RASP.

Woodwork, trimmed into shape by the adze, received a finish from the rasp, "jiri," made of the rough skin of the Ray. An unmounted fragment, such as a piece of the tail, sometimes served, but more usually the skin was neatly mounted on a wooden handle.

The natives of Fakaafu, "had saws and files, formed of shark's skin stretched on sticks, which in their hands were quite effective in wearing away the soft wood.† From Santa Cruz and Banks Island, New Hebrides, Edge-Partington shows similar mounted rasps.‡ Lamont relates that at Penrhyn Island:—"The spears are finally polished with the 'poerare,' a kind of rasp, of fish-skin, fastened on a stick.§" Captain Cook saw on Tonga "rasps, of a rough skin of a fish, fastened on flat pieces of wood, thinner on one side, which also have handles."¶

Ling Roth figures a "file made of fish-skin gummed on to wood, from S.E. Borneo."¶¶

The Funafuti specimen of which figs. 21 and 22 give back and front views, weighs three and a



Fig. 21.

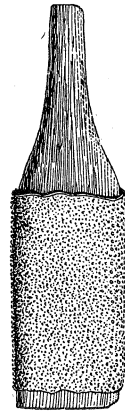


Fig. 22.

\* Since the preceding pages were printed off, a figure and description (Journ. Anthropol. Inst., xxvi., 1897, p. 433) of the New Caledonian drill, therein mentioned, have reached me. † Wilkes—*loc. cit.*, v., p. 17. ‡

‡ Edge Partington—*loc. cit.*, i., pl. clxiii., fig. 9; ii., pl. lxxxvi., fig. 3.

§ Lamont—*op. cit.*, p. 155.

¶ Cook—A Voyage to the Pacific Ocean, i., 1784, p. 395.

¶¶ Ling Roth—Natives of Sarawak and British North Borneo, ii., 1896, p. 256.



half ounces, and is eleven inches long by two and three-quarters wide. The sheet of ray skin is six inches by four, and is sewn together at the back with fine sinnet. The bleached condition of the wooden handle shows it to be drift wood, and the weight and grain agrees with that of red cedar (*Cedrela toona*).

Rasps were also improvised out of a rough piece of coral.

#### SPADES.

The literary history of the spade in the Pacific is both brief and obscure.\*

An article is represented in the Ethnographical Album,† which Dr. Gill describes as “the ancient spade of the Mangaiians, always used in a squatting posture, also used (and intended to be used) as a club”; Edge-Partington further figures a series‡ described in the margin as “steering paddles,”§ but which are indexed as “spades”; from Fiji a spade-blade of tortoiseshell, bored for lashing to a handle, is represented;|| from Samoa is shown¶ an instrument referred to as a “spade (?) of Pinna shell”; and from Tonga a *Meleagrina margaritifera* valve, bored and similarly mounted on a pole, is classified as a “spade(?)”\*\*

On Fakarava, Paumotu Group, Stolpe obtained a “model of spade wherewith aforetime they buried their dead. The model, which is of the actual size, consists of a staff, with a great pearl mussel shell fast bound to either end by coconut plaiting. The entire implement is 146 cm. long.”††

Of the Tongans, Captain Cook wrote:—“The instruments they use for this purpose [digging], which they call *hoo*, are nothing more than pickets or stakes of different lengths, according to the depth they have to dig. These are flattened and sharpened to an edge at one end; and the largest have a short piece fixed transversely, for pressing it into the ground with the foot. With these,

\* For remarks on the use of agricultural implements in New Zealand, see Polack—Manners and Customs of the New Zealanders, ii., 1840, p. 194; and in Australia, R. Etheridge, Junr.—Proc. Linn. Soc. N.S.W., ix., (2), 1894 (1895), pp. 109-112.

† Edge-Partington—*op. cit.*, i., pl. v., fig. 6.

‡ *Id.*, *loc. cit.*, pl. xxxvi., figs. 1-3.

§ All the steering paddles that I have seen were carved solid in one piece, and the frailty of the specimens drawn suggests to me that he who ticketed these articles “steering paddles,” had not acquired his lore in the salt air and sunshine of the Southern Seas. For he had surely never seen a steering paddle jammed hard down with all the force of the brown steersman’s arm and watched the surging water straining it as the tall and tasselled prow swung slowly up to windward.

|| Edge-Partington—*op. cit.*, pl. cxix., fig. 12.

¶ *Id.*, *loc. cit.*, ii., pl. xlv., fig. 3.

\*\* *Id.*, *loc. cit.*, ii., pl. 1., fig. 9.

†† Trans. Rochdale Lit. and Scientific Soc., iii., 1893, p. 112.

though they are not more than from two to four inches broad, they dig and plant ground of many acres in extent.”\*

Though the peculiar method of mounting the blade by boring and lashing to the pole, may be useful as a clue in distinguishing the Pacific spade, it cannot be regarded as a feature separating it from other implements. A type of New Caledonian axe† shares this character, and in the Gilbert Group the paddles are made in this way, as Wilkes has shown‡ and Finsch confirmed.§ With the Gilbert paddle agrees another figured from the Admiralty Islands by Moseley,|| and a specimen from Anchorite Island in the Australian Museum. Indeed the Pacific spade suggests for itself a polyphyletic origin from the paddle of the Gilbert Islander, the club of the Mangaiian, or the axe of the New Caledonian.

In the Ellice, two agricultural implements existed. A species of mattock, resembling an adze of which the minor limb was lengthened and armed with turtle carapace, was obtained by one of the officers of H.M.S. “Penguin,” on Funafuti. A cognate tool is mentioned by Finsch from Mortlock Island.¶ Another of our party also procured some indifferent models of a spade, or long-handled shovel, on Funafuti, where their use had been long abandoned and their place taken by metal bladed substitutes.

On Nukulailai, however, I found this type surviving and in daily use. A specimen I there procured is shown by figs. 23 and 24. This spade is in two parts, a handle and a blade; the former is a pole, perhaps of *Ochrosia* wood, five feet long and an inch and a quarter in diameter, and the latter an oval, spoon-shaped board of perhaps *Calophyllum* wood, sixteen inches long, nine wide, and half-an-inch thick, proximally it narrows to a shaft four inches long and one and a half wide, which is bound to the pole, additional strength being given by lashings which pass round the pole through two pairs of perforations in the

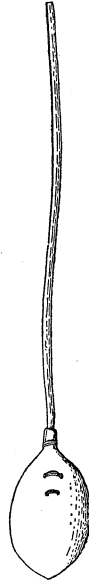


Fig. 23.

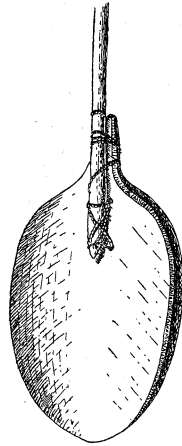


Fig. 24.

\* Cook—A Voyage to the Pacific Ocean, i., 1785, p. 392. A Maori spade and hoe are figured by Taylor—New Zealand and its inhabitants, 1870, pp. 360, 423; and the Hawaiian by Ellis—*loc. cit.*, iv., p. 195.

† Edge-Partington—*op. cit.*, i., pl. cxxviii., fig. 3.

‡ Wilkes—*loc. cit.*, v., p. 52, fig. § Finsch—*loc. cit.*, viii., 1893, p. 70, fig. 12.

|| Moseley—Journ Anthropol. Inst., vi., 1877, pl. xxii. ¶ Finsch—*loc. cit.*

blade, bored respectively at five and seven inches from the stem. The blade is straight longitudinally, but transversely the curving sides rise an inch and a half above the centre. Such are frequently constructed of broken or disused wooden basins.

#### KOUTEKI.

The method of climbing palms in Funafuti has been described on p. 26. The "kouteki" used in that operation is illustrated



Fig. 25.

by fig. 25; the side shaded in my drawing being the face applied to the palm trunk. This article is carved from a

hard dark wood, perhaps *Calophyllum*, weighs four and a half ounces, is twenty-one inches long, two broad, and one thick.

#### COCONUT SCRAPERS.

An ordinary kitchen utensil is the "twaikarea," or mounted scraper. Of this the old form has entirely passed out of use, having been replaced by an iron instrument. I was, however, by the courtesy of the late king's daughter, so fortunate as to receive from her as a return gift for a bottle of European scent, the specimen shown by fig. 26, which was, I was assured, the last survival in the atoll, if not in the archipelago, of the ancient pattern, where its place is taken by a metal substitute. In use the twaikarea is laid upon the ground and the blade is thrust through one of the loose coco-leaf mats; sitting down, the operator rests the thigh on the straight shaft of the utensil to keep it firm, and grasping a split coconut rocks it over the blade till the kernel is shredded away. The shreds are then gathered from the mat for cooking or making oil.

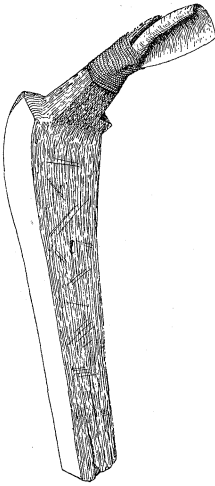


Fig. 26.

The method of using this instrument on Funafuti is shown in the accompanying sketch (Plate xiv.), for which I am indebted to my friend Mr. Norman Hardy. In Matty Island it appears that the operator does not sit, but stands on the instrument and stoops to his work.

The wooden holder whose worn and discolored appearance indicates a respectable antiquity, consists of a cone departing at

half a right angle from a straight board, all being in one piece of a kind of hard, white wood unknown to me. The board or seat is eighteen inches long, an inch thick, three inches wide at the end, and four at the elbow. The cone is six inches long, and tapers from two and a half inches at the base to an inch at the summit. On the upper side it is excavated to receive the blade. A spoon-shaped fragment, four inches long and two wide, from the columella of the "karea" shell (*Pterocera lambis*), ground to a chisel edge on the outer side, constitutes the blade, which is retained in position by interlaced lashing of sinnet, like that of the adze. The weight of this implement is one pound eight ounces. Upon an emergency a twaikarea might be used, I was informed, as a substitute for the toki fasua.

Somewhat different are the coconut scrapers figured and described from Matty Island, in German New Guinea.\*

An homologous utensil, "kamdjoo," consisting of an armed stick sloping in a fork stuck in the ground, is recorded from the Ladrões.†

Of this latter type a specimen from the Marshall Islands, set with a blade of hard coconut shell, is contained in the Australian Museum. This form was probably steadied by the knee when in use. The localities suggest that it will prove a characteristic of Micronesia.

The article just described is intended only for scraping the kernel of the coconut shell which has become firm and thick with age. Another kind of scraper is used to prepare pap for infants' food from the soft kernel of the half-grown nut. The latter kind seems to be in common use over a wide area and usually takes the shape of a slip of pearl shell an inch or two inches broad and twice as long, having the broader end finely serrated. Some I collected at Mita, Milne Bay, British New Guinea, were called there "kahi." From the Solomons, Edge-Partington figures two examples,‡ the former from New Georgia being etched pictorially on the concave face. Finsch illustrates another from Finschhafen, German New Guinea.§ On Penrhyn Island:—"With a piece of mother-of-pearl, called a 'tuè,' some six inches long, and tapering to a point, and about two broad at the base, where it is nicked like a saw, they scrape the meat very fine. This they do by placing a half nut between their legs, pressing the edge down with the left thumb, holding the tuè like a pen, in the right hand,

\* Edge-Partington—*Journ. Anthropol. Inst.*, xxv., 1896, p. 294; pl. xxiv., figs. 7, 8.

† Freycinet—*Voyage Uranie et Physicienne*, ii., 1829, pp. 313 and 447, pl. lxxix., fig. 2.

‡ Edge-Partington—*loc. cit.*, ii., pl. ci., fig. 12; pl. cxii., fig. 8.

§ *Ethnological Atlas*, 1880, p. 26, pl. v., fig. 8.

and scraping from the edge downwards, the left forefinger pressing on and assisting the others in the operation.”\*

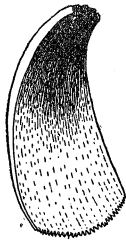


Fig. 27.

On Nukulailai I procured a specimen, called “twai,” cut from *Meleagrina*, one ounce in weight, three and three-quarter inches long, and tapering in width from an inch to an inch and a half. On Funafuti pearl shell was a material too precious for this use, and hard coconut shell was employed in the specimen drawn in fig. 27, which is three-quarters of an ounce in weight, four inches in length, and tapers from a broken point to an edge an inch and three-quarters broad, denticulated by thirty small teeth.

The ribs and carapace of *Chelone midas* are formed into scoops “sesefonu,” for paring the kernel of coconuts. No two

of the series collected at Funafuti are quite alike. Variations selected for illustration show—the former, (fig. 28) a double-ended scoop, an ounce and a half in weight, an inch broad, and seven and a half long; the latter, (fig. 29) two and a half ounces in weight, eleven inches in length, and one and a half in width, at one end it tapers to a point and at the other is bevelled three inches on the concave surface to the blade.

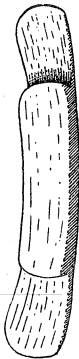


Fig. 28.

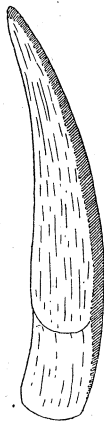


Fig. 29.

To this category probably belongs a Fijian article sketched by Edge-Partington† described in the margin as a “taro spade of bone,” but corrected by Sir Arthur Gordon in “Additional Notes” to “implement of turtle bone used for preparing puddings.”

A scoop was occasionally improvised from a valve of the common *Asaphis deflorata*.

## IMPLEMENTS FOR FISHING AND HUNTING.

### FISH-HOOKS.

The fish-hooks used by the Ellice Islanders may conveniently be grouped under three heads; firstly, those made in one piece and used baited in the ordinary way, secondly, those made with

\* Lamont—*loc. cit.*, p. 117.

† Edge-Partington—*loc. cit.*, i., pl. cxix., fig. 16; see also ii., pl. lix., fig. 7.

separate barb and shank, baited and sunk for deep sea fish, and thirdly, those also made of two separate pieces but trailed unbaited on the surface. The two latter types, highly specialised forms, are still in common use, but the former more generalised pattern has been entirely superseded by European metal hooks. The Octopus bait of stone and cowry shells, so frequently used in Polynesia was not seen by me on Funafuti, though Lister records it from Fakaafu.

#### SIMPLE FISH-HOOKS.

Of the old-fashioned hooks carved in one piece no actual specimens exist to-day on Funafuti. A few of bone and pearl shell, which had survived till our visit, were carried away by the Expedition, and I am partly dependent for my information upon models of extinct types made for me by old men.

An old type, the "matou tifa,"\* which I saw in the possession of a native, but failed to procure, is figured (fig. 30) from a pencil drawing made on the spot. It was of pearl shell, about two inches in diameter and a third of an inch thick. So excessive is the curvature that the inner margin describes three-quarters of a circle. The base is expanded to afford a grasp for the fishing-line, the tip is tapered gradually to a sharp point, distant a third of the circumference from which is a sharp backwardly directed barb.

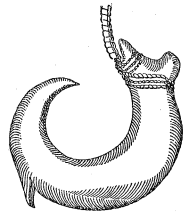


Fig. 30.

Such hooks were seen by Captain Cook in Tahiti, and the manufacture of them he thus describes :—"The manner of making them is very simple, and every fisherman is his own artificer: the shell is first cut into square pieces, by the edge of another shell, and wrought into a form corresponding with the outline of the hook by pieces of coral, which are sufficiently rough to perform the office of a file; a hole is then bored in the middle, the drill being no other than the first stone they pick up that has a sharp corner: this they fix into the end of a piece of bamboo, and turn it between the hands like a chocolate mill; when the shell is perforated, and the hole sufficiently wide, a small file of coral is introduced, by the application of which the hook in a short time is completed, few costing the artificer more than a quarter of an hour."† Finsch gives a description which corresponds with Cook's, and illustrates his remarks with diagrams of half-made hooks from Nukuor in the Carolines.‡

\* In Mariner's Tongan Vocabulary, fish-hook is "matow."

† Cook—*loc. cit.*, p. 219.

‡ Finsch—*loc. cit.*, p. 333, pl. iii., figs. 9, a, b.

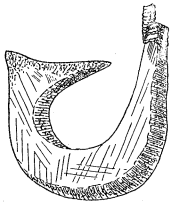


Fig. 31.

Another antique form, called simply "tifa," of which I was fortunately able to secure an authentic example, is shown by fig. 31. It is osseous, formed probably from the carapace of a turtle, a third of an inch thick, and an inch and a half in diameter, and weighs two drachms forty-nine grains. I was informed that such hooks were occasionally made of hard coral. From the preceding it differs in the shape and position of the barb. When the hook lies before the observer, with the barb pointing downwards, the hook has somewhat the form of a C. A hook of this type is figured from Fakaafu by Lister.\* Hooks resembling this form are figured by Finsch,† but here the ends are reversed, what forms the barb in the Ellice hook being the point of attachment of the fishing-line in the Caroline one, and *vice versa*. On the other hand various Tahitian hooks figured by Edge-Partington‡ agree with mine. As Finsch remarks, it is difficult to understand how fish were caught with these blunt and clumsy hooks, but that they effectually served their purpose is certain.



Fig. 32.

A small comma-shaped tortoise shell hook is called "faba" in Funafuti. Though an inch in length, it is barely a millimetre thick, weighing three grains. The specimen figured (fig. 32) is a model of an extinct species, made for me on Funafuti. Though there are vague references in literature to small turtle shell hooks in the Pacific, I have not been able to find a figure or description corresponding to my specimens. Keate tells us that the Pelew Islanders made their fishing hooks of tortoise-shell, one of which he figures.§

Some of the hooks in the Australian Museum, wrought from turtle shell, show evidences of having been bent by heat, but the Funafuti ones seem to have been carved cold.

#### PEARL SHELL BONITO HOOKS, "BAWONGA."

These fish-hooks represented to the Ellice Islanders of past generations their most valued treasures. Apart from their intrinsic worth they acquired, as conveying a maximum of wealth in a minimum of space, an artificial value approximating to the coins of more advanced civilisations. Instances have been given of their presentation to the gods (p. 47), of their burial with the owners (p. 53), and of their transmission from atoll to atoll by

\* Journ. Anthropol. Inst., xxi., 1892, pl. ix., fig. 2.

† Finsch—*loc. cit.*, pl. iii., figs. 5, 6, and 7.

‡ Edge-Partington—*loc. cit.*, ii., pl. xxi.

§ Keate—*op. cit.*, p. 311, pl. ii., fig. 4.

Frigate-birds (p. 59). In Tonga the hook of the god Tangaloa was an heirloom preserved for many generations.

In this Archipelago their value was heightened by the rarity and inaccessibility of the shell, (*Avicula cumingii*) from which they are manufactured; hardly any are found at Funafuti, and the Group is principally supplied from a bed in the Lagoon of Nukulailai; whence they are procured by expert divers.

This type of hook is universal throughout the Pacific, being used alike by Melanesians, Polynesians, and Micronesians. Besides those collected by the Expedition, the Australian Museum contains instances from Manihiki and Mortlock Islands, and the Gilbert and Hawaiian Groups. Among Edge-Partington's sketches may be recognised further instances from Danger Island, Strong's Island, Tahiti, Tonga, and the Solomons.\* In addition, Finsch quotes this type from the Carolines, the Marshalls, and the Marquesas.† In New Zealand, where the substance of which it is usually manufactured does not exist, the Maories found in the shell of the "pawa" (*Haliotis iris*), a substitute for the flashing nacre of the *Avicula*. But this shell being too brittle to stand alone, is supported by a backing of "totara" wood (*Podocarpus totara*). It is used, according to Hutton,‡ for catching the "kahawai" (*Arripis salar*). The barb is itself single or double recalling the Tongan pattern. Specimens of this interesting variation lie before me in the Museum collection, and correspond fairly to the instances figured by Brough Smyth§ and Edge-Partington.||

The habits of the Bonito (*Thynnus pelamys*), for whom these hooks are intended, resemble those of its near relation the European mackerel; they eagerly rush at and swallow any attractive object, guided apparently by sight, not scent.

Of the considerable literature which has accumulated on the subject, probably the first notice of the use of these hooks is Captain Cook's remark of them in the hands of Tahitian anglers¶:—"Of fish-hooks they have two sorts, admirably adapted in their construction as well to the purpose they are to answer, as to the materials of which they are made. One of these, which they call 'wittee wittee,' is used for towing. The shank is made of mother-of-pearl, the most glossy that can be got: the inside, which is

\* Edge-Partington—*loc. cit.*, i., pl. lxii, fig. 0; pl. lxxxvii., fig. 8; pl. clxxvii., figs. 9, 10; pl. ccix., figs. 4, 5, 6; ii., pl. xxi., figs. 1-3.

† Ann. K. K. Naturhist, Hofmus., viii., 1893, p. 332. A Caroline specimen is figured in the Voyage Uranie et Physicienne, pl. lviii., fig. 10.

‡ Guide to the Collections in the Canterbury Museum, 1895, p. 217. See also Wakefield—Adventures in New Zealand, i., 1845, p. 93.

§ Aborigines of Victoria, i., 1878, p. 392.

|| Edge-Partington—*loc. cit.*, i., pl. cccxci., fig. 9.

¶ First Voyage, ii., 1773, p. 218.



naturally the brightest, is put behind. To these hooks a tuft of white dog's or hog's hair is fixed so as somewhat to resemble the tail of a fish; these implements, therefore, are both hook and bait, and are used with a rod of bamboo and line of 'erowa,' [a kind of nettle which grows in the mountains]. The fisher, to secure his success, watches the flight of the birds, which constantly attend the Bonetas when they swim in shoals, by which he directs his canoe, and when he has the advantage of these guides, he seldom returns without a prize."

This sport is thus vividly described from another island by W. T. Pritchard\*:—"Bonita fishing is, perhaps, the most risky of all Samoan adventures. The natives start off at the dawn of day, and paddle far out to sea in the calm of the morning, and there trail their hooks behind the canoes, heedless of the brewing storm, and trusting to the strength of their arms and the fleetness of their skiffs, to reach the shore before its full force overtakes them. The bonita are found in 'shoals,' with birds hovering over them; and when these birds are still further out to sea, the fishermen bend to their paddles, and the canoes skim over the waves until in the midst of the 'igafo,' as the shoal is called. There the hook, still trailing from a long bamboo rod over the stern, is played to and fro, and as the bonita bites at it with a spring and a splash, he is tossed up with a jerk, and landed in the canoe with a shout and a cheer."

The bamboo does not grow in Funafuti, where the fishing-rods are chosen from the "miro," *Thespesia populnea* (p. 37). In Tahiti, the rod has bunches of feathers to imitate birds.† In action the rod butt fits into a rope eye slung from the aftermost thwart (like a sprit-yard when it is shipped in an eye slung from the mast), it reclines in a raised rest carved on the after-decking of a Funafuti canoe (Plate xv.) At Simbo, in the Solomons, Mr. Hardy tells me that a bamboo scoop is drawn through the water to attract the bonito.

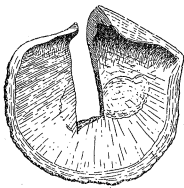


Fig. 33.

The shank "ba," of the hook is carved from an *Avicula* valve, so that a slice from the thinner part of the valve is attached to a thicker ridge from the hinge. A valve of *A. cumingii*, from which a hook had been cut, or rather I presume sawn along the sides and snapped off at the tail, which I procured on Nukulailai is figured (fig. 33) to illustrate the mode of manufacture. In one hook from Funafuti (fig. 34) the shank

\* Pritchard—Polynesian Reminiscences, 1866, p. 175; see also Wilkes—*op. cit.*, v., p. 11.

† Ellis—*loc. cit.*, i., p. 148.

is compound, being lengthened and strengthened by a strip of pearl shell, neatly fitted and lashed to the butt-piece. This is the only instance of such that has come to my notice, and doubtless was the result of economy in the use of a rare and valued substance. This hook is the largest of the series from Funafuti, being three inches and a quarter in length, but it is dwarfed by a specimen from Manihiki, six inches long. In weight it is six drachms nine grains. I did not see the whole process of manufacture, but such as I saw, nearly completed, in Funafuti were fashioned with but one tool, a small hard piece of *Montipora* coral called "lapa," with which the implement was rasped into the desired shape. The tail end of the shank is either made forked or square. The opposite thicker end of the shank is so designed to bear the perforation necessary for lashing on the fishing-line.

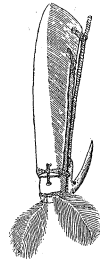


Fig. 34.



Fig. 35.

In the article (fig. 35) taken half-finished from the workshop, the perforation has not yet been made. This hole is drilled with a tool just like that figured by Wilkes\* from Fakaafu, in the Union Group. No specimens of this existed on

Funafuti when we were there, though they were described to me as having formerly been used tipped with *Terebra maculata* or *Mitra episcopalis*. Critical examination reveals that these perforations were not drilled from one side through to the other, but half through from one side to meet half through from the other. The face of the shank corresponding to the exterior surface of the valve was ground till the dull dark surface disappeared, the convex surface of the finished hook always presenting the most brilliant lustre. It is asserted by fishermen that a particular color of the nacre is preferred by the fish, and a hook is tried, polished, and re-polished till the exact play of light is obtained.

Among the hooks from Funafuti the makers have chosen as material for barbs, "wonga," bone (probably of *Delphinus*, possibly of *Sus*), mother-of-pearl (*Avicula*), and turtle-shell (*Chelone*). One from Tahiti with a barb of *Pinna* shell is figured by Edge-Partington,† and doubtless other substances would be found on examination of a large series. A Gilbert Island example in the Museum Collection has for barb a bent copper nail; and a hook from Funafuti (fig. 36) is armed with a piece of steel wire bent and pointed. The separate pearl shell barb from a half finished article (fig. 37) of Funafuti will convey an idea of its proportions.

\* Wilkes—Nar. U.S. Explor. Exped., v., 1845, p. 18.

† Edge-Partington—*loc. cit.*, ii., pl. xxi., fig. 2.

Two perforations are the rule, but in the specimen with the compound shank a third exists. Unlike the kahawai hook from New Zealand, the barb is always simple in the Central Pacific type.

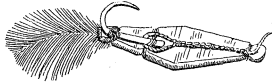


Fig. 36.



Fig. 37.

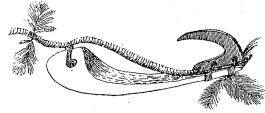


Fig. 38.

To the shank the barb is securely lashed by twine threaded through the perforation, the distal of the two lashings also serves to hold the beard; in the specimen figured (fig. 38) this latter is of European cotton thread, but usually it is of native fibre. The hook is made more secure by wedging on either side of it under the lashing, a piece of wood, which, in the examples at my disposal, is invariably from the mid rib of a coconut frond pinnule. Finsch\* describes such wedges as of bone or fish-bone splinters.

A hook which differs from the usual type is represented in the Australian Museum from Mortlock Island. This pattern has been noted from Strong's Island by Edge-Partington,† and has been well figured from Mortlock by Finsch.‡ It differs markedly by the shape of the barb, the angle at which it is set, and especially by its mode of attachment to the shank and severance from the fishing-line. The tail end of the shank is deeply cut by two pair of notches to which the barb is fastened by a species of "cross-seizing." The hinge of the *Avicula* is cut lengthwise to form the shank of this hook, not as usual across.

The taste of the fish or caprice of the artificer results in much diversity of beard, "singa." In Funafuti, white feathers (which appear to my colleague, Mr. A. J. North, to have been plucked from the breast of the Black-naped Tern, *Sterna melanauchen*) are in vogue. In one hook (fig. 34) a pair of these feathers ornament the tail end of the shank, their shafts being twisted into the furthest lashing upon the lower surface. Two pair are inserted upon the other specimen figured, (fig. 38) in a corresponding situation, while a third pair garnish the fishing-line near the butt end of the hook. Finsch § quotes specimens from Nukuor, in the Carolines, collected by Kubary, adorned with black feathers. From the preceding extract, it will be seen that Captain Cook observed dog's and pig's hair used in Tahiti. An instance is before

\* Finsch—*loc. cit.*, p. 331.

† Edge-Partington—*loc. cit.*, i., pl. clxxvii., figs. 9-10.

‡ Finsch—*loc. cit.*, pl. iii., fig. 1.

§ Finsch—*loc. cit.*, p. 332.

me of European lamp-wick forming a beard for a Manihiki hook, and a Gilbert Islander has so utilised a bit of canvas ; the Museum series further afford a Mortlock hook bearded with dressed *Hibiscus* bark. Pieces of tappa cloth, varying in colour according to the kind of fishing, are mentioned by Finsch from the last-named Island.

The hook with which the great god Tangaloa dragged up Tonga from the bottom of the sea, was described as "made of tortoise-shell, strengthened by a piece of the bone of a whale ; in size and shape it was just like a large albacore hook, measuring six or seven inches long, from the curve to the part where the line was attached, and an inch and a half between the barb and the stem."\*

The fishing-lines attached to these hooks are always sold together with them ; being required to endure tremendous strain, they are fastened to the hooks inseparably. In the Ellice, as in the Gilbert and Manihiki specimens, these are composed of *Broussonetia*, and are fine, white, three-ply cord, two to three mm. in diameter, of immense strength. In the words of Captain Cook, † the Polynesians "make the best fishing-lines in the world : with these they hold the strongest and most active fish, such as bonetas and albacores, which would snap our strongest silk lines in a minute, though they are twice as thick." Dr. Finsch informs us that in the Carolines the fishing-lines were constructed of *Hibiscus* fibre, and that the Archipelago was chiefly supplied with this article from Nukuor.

*Synopsis.*—This kind of fish-hook may, on the model of systematic biology, be classified as follows :—

*Genus* TRAILED PEARL SHELL HOOKS.

*Description.*—Of two pieces, pearl shell shank and attached hook of the same or other substance, large, bearded, trailed on the surface without bait, principally employed for bonito ; extends throughout the Pacific.

*Type.*—Fig. 38, p. 270.

*Species* A.—Type species.

*Description.*—Shank mother-of-pearl, bored at thick end to attach fishing-line, which is then carried along the face of the shank and made fast to the barb, tail not serrated ; beard and barb of various substances.

*Locality.*—Pacific.

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\* Mariner—Tonga, i., 1817, p. 285.

† Cook—*loc. cit.*, p. 218.

*Sub-species A.*

*Description.*—Metal barb, shank flat and notched to fasten fishing-line.

*Locality.*—Ellice Group.

*Type.*—Fig. 36, p. 270.

*Species B.*

*Description.*—Fishing-line not carried to barb, barb lashed to serrations on the tail of the shank, shank perforated for fishing-line.

*Locality.*—Mortlock and Strong's Islands.

*Type.*—Finsch, Ann. K.K. Naturhist. Hofmus., viii., 1893, pl. iii., fig. 1.

*Sub-species B.*

*Description.*—Shank notched or toothed, not perforated, for reception of fishing-line.

*Locality.*—Solomon Islands.

*Type.*—Edge-Partington, Ethnol. Album, ii., pl. ccix., fig. 5.

*Species C.*

*Description.*—Kahawai hook, shank of pawa face and wood backing, barb bone and double barbed at tip.

*Locality.*—New Zealand.

*Type.*—Smyth, Aborigines of Victoria, i., 1878, p. 392, fig. 230.

*Species D.*

*Description.*—Shank round, barb shaped like a scythe blade, no beard.

*Locality.*—New Guinea.

*Type.*—Finsch, Ethnol. Atlas, pl. ix., fig. 3.

## PALU HOOKS.

As characteristic an ethnological feature of its especial region as the boomerang of Australia or the bola of South America, is the wooden deep sea fish-hook from the Central Pacific. All authors in dealing with this remarkable type of large wooden hook from Micronesia and Polynesia have termed it a "shark" hook. In the preceding pages, (p. 199) a description by Mr. Louis Becke is given of the "shark," for which this instrument is intended. This excellent account, though not couched in technical language, clearly indicates that the fish in question, the "palu," is no shark, and has suggested to Mr. E. R. Waite the idea of some Macruroid.

"This peculiar fish," writes Becke, "is, as far as I know, only found in the Tokelau, Ellice, and Kingsmill Groups, and at the isolated islands of Pukapuka (Danger Island), Suwarrow, and Manahiki. I do not know for certain, but I have been told by many intelligent natives that the palu is *never* to be found among the high islands, such as the Fijis, Samoa, New Hebrides, &c." He also mentions catching palu at Nieue.

Tracing the geographical distribution of this hook, we note it recorded from Nanomea,\* by Brill; from Nukufetau in the Ellice, Nukuor in the Carolines, and Tarowa in the Gilberts, by Dr. Finsch;† from Nukulailai, Nieue, Tamana, and the Union Group, and possibly an eccentric type from the Louisiades,‡ by Edge-Partington, and the latter also by Macgillivray;§ a drawing of a Penrhyn Island hook, by Wilkes,|| may be intended for this type; while a huge form is represented in the Australian Museum from the Mortlock Group, and another variation is pictured from the Trobriands by Finsch.¶ A specimen resembling the latter, said to come from Milne Bay, B.N. Guinea, was lately procured by Mr. Norman Hardy at Samarai, and will be described shortly in the Proceedings of the Linnean Society of New South Wales.

Lister\*\* figures a palu hook from Fakaafu, and from Atafu, Dr. Coppinger†† procured "a large wooden shark-hook, with rope snooding made of coconut fibre." A modification of the usual pattern is shown from Fiji in the Macleay Museum, Sydney, agreeing with a figure by Edge-Partington.‡‡

The shape of the palu hook is roughly that of a V or U, of which one arm projects beyond the other, the shorter being turned at right angles towards the longer and ending in a sharp point. So bizarre a form rather strains the application of ordinary terminology, but the re-entering point, seen on closer examination to be a separate piece, may most conveniently be termed the "barb," the remainder of the hook the "shank," while a coconut fibre rope always attached to the longer limb, and homologous

\* Brill—*Ethnographische Abtheilung, Katalog, i., 1897, pl. vi., fig. 365.*

† Finsch—*Ann. K K Naturhist. Hofmus., viii., 1893, pp. 54 and 333, pl. iii., figs. 14, 15.*

‡ Edge-Partington—*loc. cit., i., pl. lxxvii, fig. 6; pl. cccvii., fig. 4; ii., pl. xcvi., fig. 1; pl. xcvi., figs. 1, 2.*

§ Macgillivray—*Voy. "Rattlesnake," i., 1852, p. 198, fig.*

|| Wilkes—*U.S. Explor. Exped., iv., 1845, p. 307.*

¶ Finsch—*Ethnol. Atlas, 1881, pl. ix., fig. 9.*

\*\* Lister—*op. cit., pl. ix., fig. 2.*

†† Coppinger—*Cruise of the "Alert," 1883, p. 157.*

‡‡ Edge-Partington—*loc. cit., i., pl. cxvii., fig. 11.*

with the piece of cat-gut on an European fish-hook, will be spoken of as the "cord of attachment."

The exact shape of the manufactured article depends on the growth of the fork from which it is hewn, and therefore exhibits considerable variation, especially in the angle in which the limbs diverge. I procured on Nukulailai rough forks (fig. 39) such as

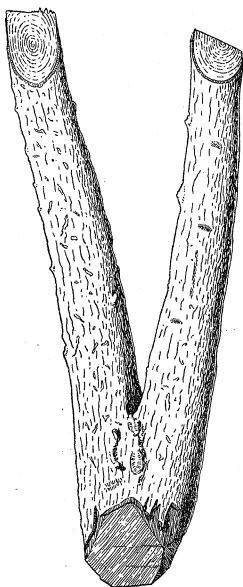


Fig. 39.

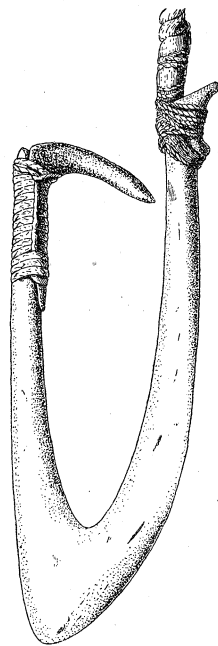


Fig. 40.

schoolboys select for making catapults, in the bark, intended for palu hooks. I recognised the bark, and the natives further informed me that the wood was "vala vala," (*Premna taitensis*). Dr. Finsch supposed that mangrove furnished the material of the Gilbert Island hook he described.

In Tahiti, Ellis tells us that the wooden shark hooks, a foot or eighteen inches in length, were cut from the roots of the "aito" tree (*Casuarina equisetifolia*), an exposed growing root of which was sometimes twisted into the shape desired for the future hook.\*

In the carefully finished example figured (fig. 40), the shank is flattened at the fork and rounded on the limbs; this is not, however, the case in other specimens of rougher workmanship. This

\* Ellis—*loc. cit.*, i., p. 146.

Funafuti example selected for description weighs, with its cord of attachment, three and a quarter ounces; the greatest length is nine and a quarter inches, the shorter limb is seven and three-quarter inches, the greatest width between the limbs is one and three-quarter inches, and the length of the barb is two inches.

The separate barb is roughly L-shaped, one limb being bevelled to form a scarf-joint with the shank, the other carved into the exact shape of a fowl's spur, to which, when affixed to the shank, its resemblance is increased by occupying the same relative position to the limb of the shank as the spur does to the fowl's leg. The joint is completed by a whipping for its entire length of flat sinnet. The most striking peculiarity of the palu hook is the extent to which the entering barb is carried, almost closing the loop of the hook. As the length of the barb is proportionate to the size of the hook, the size of the aperture is decided, not by the length of the barb but, by the divergence of the limbs of the shank. The specimen figured is extremely narrow, a quarter of an inch only separating the point of the barb from the opposite limb of the shank. Finsch's Tarowa hook exhibits an opposite extreme of width which can be matched in a hook from Nukulailai, where three-quarters of an inch intervene between barb and shank. If the hook is held before the eye so that the shorter limb of the shank appears super-imposed upon the longer, the barb is usually seen to be slightly deflected to the right. When, as in the Mortlock hooks, this feature is exaggerated, the complete hook is thrown into an ascending spiral. Considerable diversity exists in the method of splicing the barb to the shank. In the Ellice Islands the face of the joint is in a plane at right angles to the plane of the hook, but the Funafuti craftsmen attach the barb to the inner face of the shank, whereas the men of Nukulailai fasten it (as is shown in the barbless shank on Finsch's plate, and as Edge-Partington correctly figures it) to the outer side, as do also the fishers of Fakaafu.

Reference has previously been made to a series of hooks from the Mortlock Group\* in the Australian Museum. Compared with the Ellice hooks these are enormous, the largest weighing one pound fifteen and three-quarter ounces, and measuring seventeen and a half inches. Grooves gnawed by captured fish upon the shanks attest their genuineness, and their size suggests that they were intended for a form of palu larger than that taken in mid-Pacific. In all points of construction they conform to the smaller type except in the setting of the barb. Here the scarf-joint is cut in the plane of the hook, that is, at right angles to the Ellice Island joint.

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\* Which of the two groups known by this name is intended is uncertain, but probably the northern is meant.



The longer or unarmed limb of the shank terminates in a knob on the outer side, half an inch below which is carved a smaller projection. The cord of attachment is a piece of round plaited coconut rope (*oukafakanapoua*) about two feet in length; the loop in which it ends is slipped over the smaller projection of the shank, and the cord lashed securely to the inner side of the shank by sinnet passing between the knobs. In the Mortlock hooks the cord of attachment terminates distally in a loop, evidently for "bending on" the fishing-line, in which it agrees with the Gilbert Island type; in the Ellice a knot ends this cord.

One Mortlock specimen has a straight stick, fourteen inches long and half an inch broad, so lashed on to the cord of attachment as almost to hinge to the long limb of the shank. A somewhat similar but not identical method of mounting the palu hook is shown by Edge-Partington\* in an instance from Niue. No Ellice hooks present this feature, but we cannot assert that they may not also be thus prepared for service.

Mr. O'Brien told me that the bait was a whole fish split and laid scale to scale upon either side of the barb. In bolting this the palu, whose jaws are very thin and pliable, gets the barb caught behind the angle of the jaw. Sometimes, when the fish bites, the line is so jerked as to bang its head with the flat stone used as a sinker.

Finsch gives the name of this hook in the Gilberts as "tingia," the name of it on Funafuti is "kou boru."

#### MESHING NEEDLES.

The meshing-needle, "afa," is carved from mangrove (*Rhizophora*) wood; in length it is sixteen or eighteen inches, in breadth about an inch across the eye and three-eighths across the shaft. The eye is about an eighth of the total length, the proximal end of it is cut either square or pointed, and the distal end simply split. The Funafuti pattern (fig. 41) is hardly to be distinguished from one used by English fishermen. The Australian Museum possesses examples of this implement exactly like the above, received from Greenwich and Sikaiana Islands.

Further modifications are given by Edge-Partington Fig. 41. from various Pacific Islands.† One such shuttle, ready loaded, depends from a group of Papuan implements figured by Lindt from China Straits.‡



\* Edge-Partington—*loc. cit.*, i., pl. lxxvii., fig. 6.

† Edge-Partington—*loc. cit.*, i., pl. xxxii., figs. 15, 16, from Tahiti; pl. cxiii., fig. 22, and pl. cxix., fig. 14, from Fiji; pl. clxxvi.; ii., pl. cxci., fig. 6, from New Guinea.

‡ Lindt—*Picturesque New Guinea*, 1897, pl. xlv.

## HAND-NETS.

“Tei” is the name of a small hand-net (figs. 42, 43) for use in the rock pools of the reef at low tide. It consists of a bag net mounted upon a frame and set upon a stout ten-foot pole, probably of

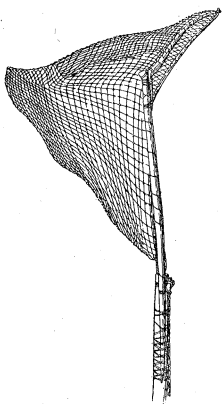


Fig. 42.

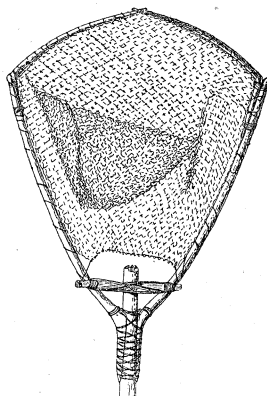


Fig. 43.

*Thespesia*. The frame is in four pieces, apparently *Rhizophora* wood. Two forks, somewhat the shape selected by boat-builders for knees, are so trimmed and set that while the shorter arms, three inches long, clasp the handle, being lashed thereto with fine sinnet, the longer arms, nineteen inches long and half an inch in diameter, continue nearly in the plane of the pole and diverge symmetrically from each other at an angle of about forty-five degrees. Two shorter pieces, about ten inches long and a third of an inch thick, are at their bases jointed on to the inner extremities of the longer arms, by the same method as the former are attached to the pole, while their extremities are crossed and lashed together. These shorter pieces are so bent that the end of the net is almost at right angles to the remainder of the frame. (fig. 43). Additional security is given by a piece of hard wood, probably *Pemphis*, six inches long, set T-wise on the end of the pole, and firmly lashed both to it and to the frame of the net. The bag is pointed, shallow, about a foot deep, sixteen inches long and fourteen inches wide, of three-quarter inch mesh of fine sinnet. The knot employed in meshing is the universal bow-line or weaver's knot.\* The bag is fastened to the frame by a cord

\* For instances of the use of this knot by Australian Aborigines, see Brough Smyth—*Aborigines of Victoria*, i., 1878, p. 390, fig. 225; and R. Etheridge, Junr.—*Macleay Memorial Vol.*, 1893, p. 249, pl. xxxii., fig. 9. For Polynesian instances see p. 64 of this work.

threaded through a mesh of each row and carried spirally along the frame.

No net quite like this seems to be represented in literature, the nearest approach being one figured by Finsch\* from the Gilbert Islands.

#### FOWLING NET.

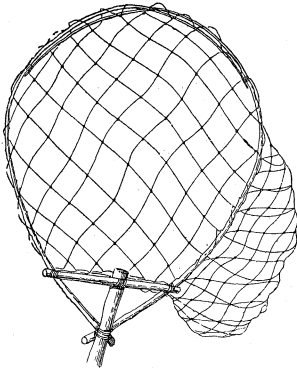


Fig. 44.

The sport of trapping birds with the "shaou-shaou" net has been already described on p. 84. A specimen of a small one (fig. 44) which I purchased on Funafuti measured eighteen by fourteen inches across the mouth. Some nets I saw employed were twice as large. The hoop is constructed by crossing and lashing to the pole the thick ends of two slender flexible twigs, a yard in length. The tips of these were crossed, bent over one upon the other, and thrice lashed. As in the preceding form, the hoop is secured to the handle by a T-piece.

The bag is eighteen inches deep, is of large four-inch mesh, and is attached to the hoop by the process of reeving the frame through each alternate mesh.

The natives of the Gilbert Group amuse themselves by catching Frigate-birds (*vide* 86) by flinging over them a stone and line. Dr. Finsch has given a vivid description of bird lassoing as practised by the Pleasant Islanders.†

#### RAT TRAP.

Before the advent of Europeans, and the introduction of the cat, the natives were greatly plagued by swarms of the Pacific Rat, *Mus exulans*. From time to time, when the pest grew beyond endurance, it was the custom of the king to order that at a given time each villager should bring to him a tale of say a hundred rats. For their destruction an ingenious trap was employed which has now disappeared, but which I am enabled to study through a model made for me by one of the oldest inhabitants. In obedience to the order, the rat traps would be repaired and set, every man, woman, and child taking charge of one or more.

\* Finsch—*loc. cit.*, p. 56, fig. 4.

† Finsch—*The Ibis*, 1881, p. 248; also *Ann. K. K. Naturhist. Hofmus.*, 1893, viii., p. 35.

These periodical battues were a source of great amusement, none went to sleep till his or her score was complete, for from the trap of any one caught napping the rats were merrily picked.

The model of the trap "tugimoa," which I obtained on Funafuti (fig. 45) weighs a pound. The body of it consists of a barrel eighteen inches in length and two in diameter, of soft white wood, probably *Hernandia*; at one end a chamber six inches deep is excavated, at the other the barrel is narrowed to a wedge and cut to a fork whose lower limb projects beyond the upper like a shark's tail. To each prong of the fork is separately bound the butt of a resilient wand, here termed the bow, of probably *Rhizophora* wood, twenty-eight inches in length. About half way along the barrel a short cross-piece of wood is lashed as a stand.

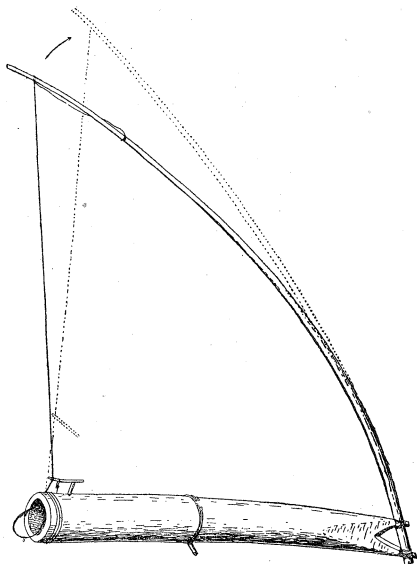


Fig. 45.

To prevent splitting, the barrel is again lashed with sinnet at the trap mouth. From the slender end of the bow descends a fine sinnet cord, here termed the bow-string. This bow-string is made fast to the bow about six inches from the end, but when in service is carried along to an inch from the end, and there made fast by a clove hitch; when not in use the bow is unstrung by slacking off and slipping down the clove hitch. There are two perforations, three-quarters of an inch apart, and one-eighth of an inch from the entrance, in the roof of the chamber; the bow-string is led in by one and out by the other, and then knotted to prevent withdrawal. Six inches from the barrel a slip of wood, the lever, two and a half inches long is tied to the bow-string. In the chamber roof, in the median line, there is also, at an inch from the entrance a sinnet loop inserted, and at two and a quarter inches from the entrance, is another perforation.

To operate the trap, a bait of coconut kernel is placed on the floor of the chamber, a wooden pin, thrust through the

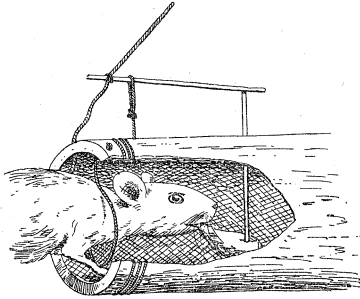


Fig. 46.

lever, which in turn releases the bow, drawing the noose tight on the rat.

I have not found a description of a trap from Polynesia answering to this, though it is mentioned by the Rev. R. Taylor that in New Zealand the rat "was formerly so numerous as to form a considerable article of food; it was taken by an ingenious kind of trap, which somewhat resembles ours for the mole."\* I am, however, informed by Mrs. Pratt, the widow of the well-known philologist, and by the Rev. George Brown that a trap like that figured above was in common use in Samoa; while Mr. J. S. Gardiner tells me that he observed it both in Rotumah and in Fiji. In these localities the barrel of *Hernandia* wood was replaced by a length of bamboo, one joint of which formed the chamber. This information suggests that as the bamboo did not exist on the Ellice it was perforce copied in wood. Some approach to the principle of it is made by the mole trap still used in the rural districts of England.

#### CANOES.

One of the most marked distinctions between Melanesians and Polynesians resides in their canoes. "The Melanesian does not venture far out to sea in his canoe; and although in the Solomons the natives make voyages from island to island of two or three hundred miles, these are entirely within the group, and performed exclusively with paddles, sails not being used at all. Indeed I suppose the Solomon Island canoes never go out of sight of land. Coming to the New Hebrides, where the population is almost entirely Melanesian, canoes are conspicuous by their absence, such as are seen being the most wretched affairs, and totally unfitted for any extended voyage."†

\* Taylor—New Zealand and its Inhabitants, 1870, p. 496.

† This statement of Mr. Woodford requires qualification, for on Mallicolo I am informed that large well-built canoes exist.

The Polynesian, on the other hand, "is eminently a navigator, venturing far to sea and making considerable voyages out of sight of land in his large out-rigged or double canoe, with its enormous triangular sail. Of course, as to all seafaring people, accidents sometimes happen, a sudden squall or succession of contrary winds prevent the navigators making their port, and the canoe is driven by the winds and currents, until in the majority of cases, no doubt, it is broken up, or its unfortunate occupants are dead of hunger and thirst; but in some instances, after drifting for days, and perhaps weeks, ignorant of their position, they have sighted one of those tiny coral atolls that dot this part of the Pacific, and landing upon it, have formed the nucleus of a future population."\*

Gill has described and figured a Polynesian compass-card of thirty-two points, employed by the navigators of the Hervey Islands.† The visits of the Tongan marauders to Funafuti have already been described (*ante* p. 44). The Ellice Group was not the only direction these pirates took, for, besides visiting most of the nearer islands, they had planted a colony in far Mangaiia.‡ In the opposite direction the natives of Tucopia, an islet five hundred miles west of Rotuma, relate that they were once visited "by five large double canoes from Tonga, the crews of which committed dreadful outrages, destroyed plantations, robbed houses, violated the females, and murdered the males."§ Figures of these large Tongan vessels are given by Dumont D'Urville.|| The exploits of Karika who, in his great double canoe with two masts and a crew of one hundred and seventy, made eight wonderful voyages between Rotuma, Savaii, Tonga, and the Hervey Islands, have been chronicled by Gill.¶ P. Smith gives from Fornander "the well authenticated voyages between the Sandwich Islands and Tahiti, a distance of two thousand three hundred and eighty miles," but I have been unable to verify the reference. As late as 1855 a great single Maori canoe lay at Hauraki, N.Z., which measured a hundred and ten feet in length.\*\*

The Micronesian also excels in navigation, the Marshall Islanders disputing with the Tongans the claim to be the boldest and most skilful sailors in the Pacific. Their canoes were provisioned for voyages of the duration of several months. On the sloping

\* Woodford—A Naturalist among the Head-hunters, 1890, p. 238.

† Gill—Myths and Songs from the South Pacific, 1876, p. 320.

‡ Gill—Savage Life in Polynesia, 1880, p. 105.

§ Dillon—Narrative of a Voyage to ascertain the fate of La Pérouse, ii., 1829, p. 112.

|| Voy. au Pole sud, Atlas pittoresque, pls. lxxviii., lxxix.

¶ Report Austr. Assoc. Adv. Sci., 1890 (1891), p. 634.

\*\* For descriptions of Maori canoes see Hamilton—Maori Art, pt. i., 1897.

platforms built out on each side there are frequently little houses in which three or four of the crew can sleep.\*

“They actually make curious charts [‘medo’] of thin strips of wood tied together with fibres. Some of these charts indicate the positions of the different islands with a surprising approach to accuracy. Others give the direction of the prevailing winds and currents. These are used as instruments to determine the course to be steered, so as to take advantage of the wind and to allow for current drift rather than as charts are used by us.”†

As the Ellice Islanders formerly fought with the Tongans and traded with the Micronesians, they probably learnt arts of seamanship from friends and foes. Once Funafuti possessed large ocean-going vessels, “fouroua,” in which cruises were made to Nui and Vaitupu, but these, Mr. O’Brien told me, had disappeared for more than twenty years. The existing canoes are only small craft, fit but for fishing or for crossing the lagoon. The adventurous spirit which prompted their ancestors to undertake exploring voyages is still alive on the atoll, where there is hardly a man who is not anxious to travel. On leaving, several of my native friends begged me to take them to Fiji or Australia upon any terms.

On Fakaafu, Lister was “told that in the old times they had two vessels—each with two masts, and without outriggers—described as being as large as the trading schooners which visit the island. Each of these would hold, it is said, all the available fighting men in the island, perhaps a hundred and fifty to two hundred men.”‡ And Newell “had reliable evidence that until recently there were planks ‘two fathoms wide,’ the remains of one of these old island canoes to be seen on Fakaafu.”§ It was probably in ships like these that the Rotumans used to visit Vaitupu and Nui.||

A method by which the inter-island voyagers secured a beacon for which to steer is thus described by Woodford:—“When I was at the island of Nukufetau, I was told that when they wanted to communicate with the island of Oaitupu, they were in the habit of making fires on the reef for two or three moonless nights in succession, until they saw the glare in the sky from the answering fires made by the natives of Oaitupu. As soon as the fires were

\* Finsch—Ann. K. K. Naturhist. Hofmus., viii., 1893, pp. 160, 161, figs. 23, 24.

† Bridge—Proc. Roy. Geogr. Soc., viii., 1886, p. 556. For figures see Cat. Godeffroy Museum, 1881, pl. xxxii.; and Journ. Polynesian Soc., iv., 1895, pl. v., p. 236.

‡ Lister—Journ. Anthropol. Inst., xxi., 1892, p. 57.

§ Newell—Proc. Austr. Assoc. Adv. Sci., vi., 1895 (1896), p. 605.

|| Dillon—*loc. cit.*, ii., p. 103.

noticed on Oaitupu, the Nukufetau canoes used to start early the next morning, and the fires were continued every night on Oaitupu till the canoes arrived, the distance being about thirty-five miles.”\*

On Funafuti the priest, “vakatua” chose the auspicious day for starting on a long voyage and in the event of the vessel missing her destination, he might suffer vengeance by being killed and eaten by the crew of starving castaways.

As the gigantic Moas of New Zealand have all perished, leaving their small relation, the Apteryx, alone to represent them, so the huge and ancient vessels of the Pacific, the great double canoes and the plank-built ship described to Lister, have vanished, leaving in existence only the little outrigger fishing canoe, “vaka.” Whether the double canoe was evolved from the outrigger, or the outrigger from the double canoe, or each arose independently of the other, we lack material for profitable consideration.

The size of the timbers used in canoe-building is, of course, directly related to the wealth or poverty of the local forest flora. Finsch’s figure† of a portion of a Gilbert Island canoe, in which seventeen small pieces of wood are neatly fitted together, speaks eloquently of the few and stunted trees growing there.

The specimens and figures of South Sea outrigger canoes within my reach, seem to show that, as has already been demonstrated in the case of most articles and ornaments, each archipelago and almost each island may be distinguished by peculiarities of structure. When these shall have been thoroughly studied, a classification will be possible, now the data is insufficient.

Of the published illustrations of these canoes that I have seen, the nearest approach in general contour to the Funafuti pattern is made by one from Samoa roughly sketched by Edge-Partington.‡ The general association of the two islands would lead us to expect a close resemblance between the object of our enquiry and the canoes of Fakaafu, which are thus briefly described by Lister:—“The canoes of the present time are built just like those of Samoa, having a single outrigger. Owing to the scarcity of large trees on the island, the body of the canoe is built of several pieces, each separately hollowed, and these are laced together with sinnet (plaited coconut fibre). Often there are as many as four distinct pieces along the bottom, and the sides are built up with additional pieces to the required height. Each piece is accurately shaped so that it will fit in among the neighbouring ones, and the joints are caulked with resin. The bow and stern are covered in for a short distance, and on their upper surfaces a number of small pyramidal

\* Woodford—Proc. R. Geogr. Soc., x., 1888, p. 352.

† Finsch—Ann. K. K. Naturhist. Hofmus., viii., 1893, p. 68.

‡ Edge-Partington—*loc. cit.*, ii., pl. xliv., fig. 9.



projections are left in the middle line, to which white shells of *Cypraea ovula* are attached for ornament. The upper surface of the stern-piece is not horizontal, but slopes obliquely downwards to the end. The canoes would hold seven or eight people.”\*

These canoes are propelled both by sail and paddle; the sail was formerly of palm or pandanus mats, and is now of calico. It is hoisted after the ordinary Polynesian method, upon two converging masts, stepped upon the thwarts or gunwale and steadied by a backstay. At each tack the masts and sail are unshipped, and carried round bodily end for end, the craft therefore never “goes about.” Under sail they can travel seven or eight miles an hour easily; they lie close to the wind, but for want of a keel make rapid leeway.

With paddles three men are the usual complement, but one alone can handle such a craft comfortably. The paddlers sit on the thwarts, paddling chiefly on the starboard side, as the outrigger impedes them on the port. When in earnest the natives can drive them at a great rate. One day I saw a crew chase, overtake and board a ship which was passing the atoll three or four miles away, and making probably five or six knots. The paddle is never rowed, grasped in both hands it is plunged vertically into the water and withdrawn after a short fore and aft stroke. A course is kept by all without any particular steering. To turn sharply the paddle is struck into the water by the aftermost man as far away as he can reach and pulled through the water towards him. When in sufficiently shoal water, the paddle is always exchanged for the pole, a method of progression which is likewise preferred by the Papuans. For an anchor, a block of coral is made fast to the painter. These canoes draw about six inches and weigh about a hundredweight and a half.

Although there are not, as in other Pacific Islands, jetties or boathouses, the canoes are well taken care of. Returning from an excursion, the canoe is carried to above high water-mark, two men lifting it clear of the ground. Here it is rolled over and lies deck down, hull up, well covered over with a pile of mats till again required. A worn out canoe cuts up into handy troughs or coffins. On Nukulailai the canoes were all tarred over, but on Funafuti they remain unpainted.

I regret my omission to note the native words for the parts and furniture of a canoe.

The specimen before me (Plate xv., fig. 1) of the ordinary outrigger canoe of Funafuti supplies the material for the following figures and descriptions, with which are included a few notes taken on the spot.

The Museum specimen is twenty-three feet six inches in total length, one foot five inches in greatest depth, and one foot three

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\* Lister—*loc. cit.*

inches in greatest breadth ; another I measured on the atoll was twenty-nine feet in total length, one foot ten inches in greatest depth, one foot four inches in greatest breadth, twenty feet the open space from deck to deck, twelve feet length of outrigger float, four feet distance from float to hull.

As previously described (p. 32), the hull is hewn out of a log of pouka, which is trimmed down for stem and stern, and, except a foot of deadwood left solid fore and aft, is hollowed to a shell three-quarters of an inch thick. In longitudinal-vertical section it is bow-shaped (the chord above the arc below), swollen in the belly, flexed forward and quite straight aft. In transverse-vertical section it is rounded and flattened beneath, the flattened area being about six inches broad, and extending along the central third of the vessel. Aft from this the tapering sides are flattened to meet in a straight sloping keel which overhangs the water and rises aft. The bows are very sharp and hollow, with a fine slender run aft, the stem is clipper-shaped, the cut-water is one foot long and overhangs four inches, when floating empty the fore foot just touches water.

Upon this hull is built up the top side planking, which, in the specimen under consideration is on the starboard side of one piece twelve feet four inches in length and eight inches in greatest depth ; on the port side it is in two pieces, fourteen feet in length, and nine inches in greatest depth ; both are an inch thick, adzed level to the deck above and sinuous below to follow the irregular curves of the hull. To the hull this planking is attached by a series of lashings placed at intervals of from four to ten inches. The lashings, consisting always of the flat sinnet braid called "kafa," are passed four times through holes bored half an inch within the edge, and knotted at each pair of holes, never being carried along from pair to pair. Where on the port side two planks join, a triangular lashing attaches each to each and to the hull. I have no reliable information of the composition and application of the caulking used in the seams.\*

The Tahitians caulked their canoes with the husk of coconut and gum of breadfruit ;† the Penrhyn Islanders stopped holes and seams with coconut husk steeped in water and pounded like flax ;‡ and the Solomon Islanders used a kind of vegetable putty from the nut of *Parinarium laurinum*.§

\* Finsch—*op. cit.*, pl. vi., fig. 5, figures a caulking-tool from the Louisiades.

† Ellis—*loc. cit.*, i., p. 156.

‡ Lamont—*loc. cit.*, p. 152.

§ Woodford—*loc. cit.*, p. 158 ; and Sommerville—*Journ. Anthropol. Inst.*, xxvi., 1897, p. 370.

The stern sheets terminate diversely, according to the taste of the architect; a vertical (Plate xv., fig. 3) or horizontal fork, representing, so the natives said, a fish's tail, being popular, and sometimes a turtle's tail is imitated.

Both fore and aft are movable deckings or hatch covers, each carved in one piece, an inch thick, of the full breadth of the hull, with the top sides of which they are flush, their narrow ends countersunk in the deadwood of the head or stern sheets and their broad ends with a finger at each corner which locks under the gunwale rail. The forward decking, two feet eight inches long, carries at its after end a seat carved in relief, hollowed on the inner side, the outer sides of which, rising in a wedge, present a vertical face two inches high and act as a wash board. The after-decking, three feet long, has a corresponding wash board, enclosing a raised rod-rest, a block three inches high, three wide, and four long, hollowed on the inside to receive a fishing-rod whose butt swings in a grummet slung from the aftermost thwart (Plate xv., fig. 4).<sup>\*</sup> Aft from the wash board along the median line of the decking there is in this individual canoe a row of seven little pyramids, each an inch and a half high. Usually they are more numerous and are sometimes continued along past the decking to the extremity of the stern. There appears to be no use for these, though it has been suggested to me that they might be useful as cleats. Lister saw them festooned with *Ovula* shells on Fakaafu. I regard them as purely ornamental, and from their association with the terminal fish-tail I further look upon them as a conventional representation of the peculiar dorsal finlets of the bonito. They are remarkable as being the only ornamental wood carving now executed by the Ellice Islanders.

From the port side of the canoe waist project three outriggers, three feet apart at the hull and slightly spreading outwards. The outrigger butts, one and a half inches square, cross to the starboard side and serve as thwarts in the interval, they are usually sunk in the top sides of port and starboard and firmly lashed thereto. The outriggers are usually entire, but are sometimes made divisible, spliced in a lock-joint and served (Plate xv., fig. 5). The advantage of detaching the outrigger float from the hull occurs when the canoes are beached and rolled over, the separated hull being more manageable. At Funafuti the outriggers are always cut from a straight stick which throws off a branch at an angle of about sixty degrees, such a timber being abundantly supplied by *Rhizophora*; the main stem is cut off six inches beyond the fork, and the branch is continued for eighteen inches, at which point it rests on the

<sup>\*</sup> Cook noticed that in Tonga the fishing-rod "rests in a notch of a piece of wood, fixed in the stern of the canoe for that purpose." Cook—Last Voyage, i., 1785, p. 396.

outrigger float. On either side of it, fore and aft, stout pegs, four or five inches long, are driven an inch or so into the solid timber of the outrigger float, to which the outrigger is secured by lashing pegs and outrigger firmly together (Plate xv., fig. 7). This seems to be an exceptional method. In other archipelagoes the outrigger is usually a straight unbranched pole, to which are fastened long stakes driven into the outrigger float. A modification of this is well shown by Finsch from the *Louisiades*.\* The four-inch pegs just mentioned appear to be the homologues of these stakes.

Another method used in Funafuti (Plate xv., fig. 6), is to bore the float horizontally and pass a lashing through the hole and round the outrigger tip. Yet another way of binding the outrigger to the float has been described to me by Mr. S. Sinclair, who saw it practised in Eromanga, New Hebrides. Here the whole structure of outriggers and appurtenances takes to pieces and is packed up when not in use; when set up, a forked outrigger, like that of Funafuti, is lashed by the butt across the hull, while the distal extremity is received into a socket in the float, to which it is secured by fore and aft rope guys leading from the float to the fork, the whole structure is therefore flexible instead of rigid. There are numerous undescribed methods of attaching the float to the outrigger; indeed this subject alone would provide material for a treatise of value and interest.

The float is a round straight log, ten feet long, six inches in diameter, distant four feet from the hull, pointed at both ends. In use it swims awash; when the canoe is heeled gradually over, a capsize occurs the instant the float is lifted clear of the water.

The outrigger platform is completed by three or more stretchers, lashed across the outriggers at intervals, the outside one being always fastened beyond the fork. In Funafuti the platform is only used for carrying paddles, masts, poling sticks, fishing rods, and such gear; it is never sat upon. In New Guinea I frequently made canoe journeys with the natives; there the outrigger platform is always assigned to a chief or "dim dim" (white man) as the seat of honour; † on it I have sat all day and slept all night. On my first canoe trip in Funafuti I at once attempted to climb on to my accustomed perch, an act which not only evoked a howl of remonstrance but nearly upset the canoe. My apparent rudeness and awkwardness taught me with humiliation the difference in the build of outriggered canoes.

For gunwale rails poles are served along each side to the thwarts, but such rails are not always present.

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\* Finsch—*loc. cit.*, pl. vi., fig. 4.

† Compare Moseley—*Journ. Anthropol. Inst.*, vi., 1877, p. 405.

Like most other Funafuti implements, the bailers are distinguished by their rough, unfinished state. In this they contrast unfavourably with bailers from other archipelagoes which are often highly finished and the subject of decorative carving on their sides, ends, and handle; wherever, indeed, the friction of their office permitted. Occasionally they attain a large size, a giant from the Admiralty Islands, which dominates its fellows in the Australian Museum, measures no less than twenty-three by twelve by eight inches. Though the general plan is common to all Pacific bailers, yet the tongue varies by being sometimes and sometimes not, carried in an arch to the floor. On the south coast of British New Guinea, a large shell, *Melo diadema*, is used as a bailer, the ventral side of the last whorl being knocked out to admit an inserted hand to grasp the columella; and in the Solomons, Somerville saw bailers "of banana leaf stitched into the shape of a small coal-scoop without a handle."\* Bailers made from a palm spathe from the Fly River, New Guinea, are in the Australian Museum.

The Funafuti bailer (Plate xv., fig. 8) is a plain, narrow, deep scoop of probably *Calophyllum* wood; in weight one pound five ounces, in length a foot, in depth two and a half inches, and in breadth narrowing from five and a half posteriorly to two and a half inches anteriorly. The sides are at right angles to the back and floor, and the handle is a median tongue attached to the back and floor, seven inches long, an inch and a half deep, and three-quarters of an inch broad; beneath the bailer is rounded to fit the canoe floor. In use it is not filled, lifted, and emptied, as with us, but the water is gathered and shot out at one vigorous sweep.

The paddles (Plate xv., fig. 9) agree with the foregoing in being made strictly for service, not at all for show. A specimen before me weighs two pounds two ounces, and measures four feet six inches in total length, of which half is handle, half blade; the former being an inch and a half square, the latter five and a half inches wide sloping to a thin edge. The blade has sloping shoulders, parallel sides, and lanceolate point. Lister remarks of the Fakaafu paddles that they have, "longer blades than those of Samoa,—in botanical language they are oblong acute, not ovate. This difference may be due to the small size of the timber on the islets."

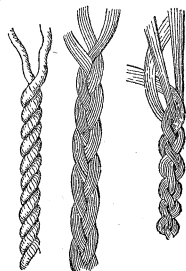
## DOMESTIC ARTICLES.

### CORDAGE.

Yarn, "loukafa," for coir ropes is obtained in lengths of about a foot from the husk of green coconuts, macerated for three or four weeks in fresh or salt water. The mode of manufacture is

\* Somerville—Journ. Anthropol. Inst., xxvi., 1897, p. 371.

to roll together a dozen loukafa threads upon the bare thigh under the extended palm, at the finish of each up and down rub a slight twist is given by a sideways motion of the hand. The short strings so produced are "amo," two of which are laid together, one projecting half its length beyond the other, and these are rolled together as before. A third string is applied to the second, so that one end lies in a fork between the end of the first and the middle of the second, while the other end projects by half its length beyond the end of the second, and the whole is again rubbed. By the similar addition of amo strings the strand continuously grows. Two such strands are again rolled together to produce the finished article, the ordinary two-ply cord "korokoro." (fig. 47). The fibre of the *Broussonetia* is treated in the same way.



47. 48. 49.

Men and women are equally proficient at this work, which is regarded as a pleasant light employment suitable to gossip over when detained indoors by inclement weather.

A hank of two-ply coconut cord from Funafuti, which weighs three and a half ounces, measures fourteen fathoms, the diameter of the cord is an eighth of an inch. This type is laid up tighter than others, and is the commonest pattern for general use, serving for twine and fishing-lines.

The two-ply cord, the most simple and wide-spread form of cordage, is probably the most primitive. The degraded natives of Tierra del Fuego made a two-ply cord of gut strands; a specimen of which in a shell necklace has been shown to me by the Hon. P. G. King, of this city, who procured it during the historical voyage of the "Beagle." The Australian Aborigines seem only to have known a two-ply cord, though they elaborated a complex form of it by rolling up a two-ply with another two-ply.

An ornamental form of two-ply cord is of a strand of human hair laid up with a strand of bark. Of this pattern is the string of the Funafuti dance armband. The same pattern may be observed in the decoration of the elaborate dance masks of New Britain and of New Ireland, these masks also carry a variation of the same where a strand of red coloured bark is laid up with a strand of natural yellow bark.

A cord, not to be distinguished from the ordinary two-ply cord except by unravelling, was made in Hawaii, of three strands.

The treble stranded cord, "kafa," of Funafuti, is a flat braid, loosely twisted direct from the yarn and made large or small as

required (fig. 48). The especial use of this is for lashing wood-work, as in sewing together the planks of canoes or fastening the frames of houses. An identical cord is made in New Guinea. A hank from Funafuti of three-ply cord, weighing five and a half ounces, measures twenty-eight fathoms, in diameter it is three-sixteenths of an inch. Another example from a kafunga is half an inch broad.

Four strands are plaited, direct from the yarn, to make a round rope, "oukafakanapoua," (fig. 49) of especial strength, used for canoe rigging, deep-sea fishing, etc. This rope is very pliant and does not kink even when new. A hank of this from Funafuti, weighing one pound one ounce, contains thirty-two fathoms of cord a quarter of an inch in diameter. From the Gilbert Islands there are in the Australian Museum samples of human hair-cord woven in this pattern.

Cook said of the Tongans:—"The rope they make use of is laid exactly like ours, and some of it is four or five inch."\*

The most complex cord I have seen from the Pacific is a seven-stranded one from Hawaii. From the Marshall Islands Finsch described † a large rope laid by a curious mechanism upon a central core.

In the Ellice a rough rope, like our straw rope, was occasionally improvised from the natural matting which sheathes the budding palm fronds.

#### BASKETS.

Baskets loosely woven from a portion of a palm frond are hastily improvised as needed for carrying fish or other articles. These are never kept to use a second time, but are thrown away when emptied. I have elsewhere ‡ described similar baskets from New Guinea, which, however, differ in size and pattern. Those of the New Hebrides appear, according to Lieutenant B. T. Somerville's description, to be made differently from either.

The simplest form (fig. 50) is a sort of tray for carrying fish. The specimen preserved measures about a foot in diameter, in shape is irregularly rhomboidal, and consists of a portion of palm frond rachis with fifteen pinnules attached, which are interlaced and then knotted in two bows.

Another type (fig. 52) is bag shaped. An ordinary example is eighteen inches long and half as deep, formed by doubling part of a frond split down the middle and plaiting the pinnules as before,

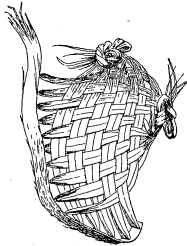


Fig. 50.

\* Cook—*loc. cit.*, i., p. 216.

† Finsch—*Ann. K. K. Naturhist. Hofmus.*, vii., 1893, p. 158.

‡ *Proc. Linn. Soc. N. S. W.*, (2), x., 1895 (1896), p. 615, pl. lvi.iii., fig. 2.

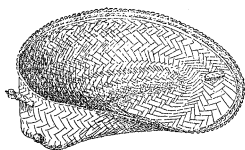


Fig. 51.

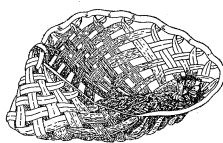


Fig. 52.

The pinnule tips, instead of being knotted at both ends of the basket as in New Guinea, are plaited along the floor and knotted in one bunch inside. A second specimen has the knot outside the basket.

A third type of basket was collected at Funafuti, the specimen of which came from Niutao. This (fig. 51) is a more finished form and was required for permanent, not temporary use. It is two feet long, one foot broad, and six inches deep. Two lengths of split frond are woven together, the two strips from the rachis making a double rim to the basket. No interstices are visible between the strands, of which an inner and an outer layer cross each other obliquely. Each pinnule is doubled, giving a thickness of four leaves to the basket wall. The basket ends are rounded, the floor flat with a median ridge, at each end the pinnule tips are plaited into flat straps, the lower three inches of which are within the basket, but the knotted extremities thereof are carried through the basket wall, making external handles. This form of handle appears to be indicated in a sketch of a Samoan basket by Edge-Partington.\* The name of this basket was given me as "kete."

#### STRAP.

A shoulder-strap for carrying weights (fig. 53) is a plaited band of pandanus leaf seven feet six inches long and an inch to an inch and a half broad. At one end is a knot, at the other a loop, the one intended to be drawn through the other. The native name of this was unfortunately not noted.

A reference in Maori literature appears to relate to a similar article:—"The Kawerau tribe derived their name from the shoulder-straps with which the chief Maki used to carry off his spoil, made of nikau leaves (*rau*); hence the name, *kawe* to carry, *rau* leaves."†

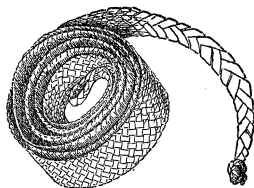


Fig. 53.

\* Edge-Partington—*loc. cit.*, ii., pl. xlvi., fig. 3.

† Percy Smith—The Peopling of the North, Journ. Polyn. Soc., vi., 1897, Supplement, p. 35. See also Edge-Partington—*loc. cit.*, ii., pl. cxxxiii., fig. 11.



## THATCHING IMPLEMENTS.

In thatching and in fastening the rough palm mats to the hut walls, awls and hooks are employed. Edge-Partington has published sketches of needles thus used in Torres Straits, Tahiti, and New Caledonia,\* but I observed none such in the Ellice Group. The collection of awls from that Archipelago exhibits great diversity of material, though agreeing substantially in form. From Nukulailai and Funafuti are specimens shaped from turtle bone, "tui fonu"; one from Funafuti is part of a swordfish bill, "tui sokera"; a third type is the spine of a sting ray, "futta," the serrations of which are ground down to make the tool, a half-made instance of which shows the transition.



55. 54.

A highly polished specimen of awl is from Funafuti, it (fig. 54) weighs half an ounce and is seven inches long. The day after I had purchased this from a workman engaged in loading battens with dressed pandanus leaves, I noticed the vendor hard at work with a fresh tool. He was using the handle of a European tooth-brush, ground to a point, and observed cheerily that it was quite as good as the one that he had sold me.

At Nukulailai I procured the original of fig. 55, whose use is to hook and draw through the string or twig used in fastening up mats, etc. It is carved of hard dark wood, probably *Rhizophora*, weighs one ounce, and is ten and a half inches long. Hooks resembling these are referred by Edge-Partington to Tahiti and Samoa.†

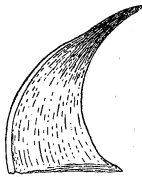


Fig. 56.

While stripping the thorns from the edges of pandanus leaves I saw one woman employ a rough leaf thimble to protect the finger-tip. Of this I unfortunately omitted to procure a specimen.

## TOSI.

A sort of claw is cut from the hard black shell of the coconut, which is called "tosi," and is used for ripping into fine strips the fibres of the titi dresses. The accompanying figure (fig. 56) represents a specimen, two and a half inches long, from Funafuti.

## BROOM.

An excellent broom, "salu," is made from a couple of hundred of the stiff mid-ribs of the coconut frond pinnules, stripped, dried,

\* Edge-Partington—*loc. cit.*, i., pl. cccxxiii., fig. 10; ii., pl. xvii., figs. 7-8, and pl. lxix., fig. 4.

† Edge-Partington—*loc. cit.*, ii., pl. xvii., figs. 9, 10; pl. xlv., fig. 2.

and tied together at the proximal end (fig. 57). Its weight is fifteen ounces, length a yard, and diameter of the handle an inch and a half. Not only the interior of the houses but all the village streets are regularly swept by the women, and kept neat and tidy. Many Europeans might copy with advantage from Funafuti; indeed during a residence of some years in the South of Europe I never met a French or Italian village where cleanliness was so thoroughly enforced.



Fig. 57.

#### FAN.

On Funafuti and Nukulailai I saw several elegant forms of fans, both plain and coloured. These patterns are all recently introduced from Samoa by the Native Teachers of the London Missionary Society, replacing the rougher fans of earlier days, which have nearly disappeared. A specimen of the real old-fashioned fan of Funafuti, "igli," was kindly presented to me by Mr. O'Brien. This (fig. 58) is heart-shaped, of plaited coconut pinnules, the ends gathered into a handle; it is two and a half ounces in weight, eighteen inches in length including the handle, and thirteen wide. The fan-shaped leaf of the *Pritchardia* palm is perhaps the model upon which such a fan was formed. The Samoan fly-flap was not employed on Funafuti.

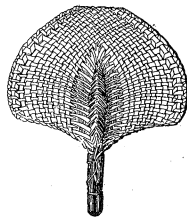


Fig. 58.

#### PILLOWS.

The pillow appears in the Pacific in two widely different forms, one that of the wooden head-rest, the other that of the mat cushion. By far the most common is the former, which is found from the furthest western station of the Papuans to the remotest eastern settlement of the Polynesians. In shape it ranges from a solid wooden block to a bar of bamboo mounted on wooden feet. Each race has treated it according to its idiosyncracies; the artistic Melanesian has tastefully carved and painted his, especially in New Guinea, where it is embellished by conventionalised animals whose limbs form appropriate supports; the simple Samoan is content with plain neat articles, while the more progressive Tongan elaborates designs on his; the crudest and roughest articles with which I am acquainted being the head-rest from the Ellice we are about to consider.

The name of both cushion and head-rest was given to me as "alunga," but in Funafuti I saw only the head-rest in use. A distinctive feature of Ellice Island work is its crudity and entire

lack of ornament, this is nowhere more noticeable than in the pillows. A characteristic specimen of a Funafuti head-rest is shown by fig. 59. It is a rough hewn, unsymmetrical, slightly bowed

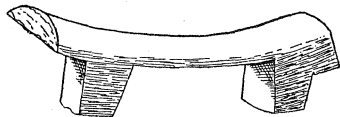


Fig. 59.

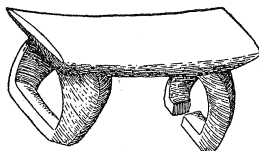


Fig. 60.

slab, supported by two rough, crooked legs, carved in one piece. It is of a hard heavy wood, in parts highly polished by use; its weight is three pounds; length twenty, breadth three and a half, and height five inches. Another specimen is more ornate and symmetrical, consisting of a flat board supported by two horse-shoe legs. This (fig. 60) is of a hard wood, probably *Calophyllum*, weighs one pound fourteen ounces, is fourteen inches long, five wide and four high. The more graceful design of this article suggests to me that it may have been made by a native of another archipelago.

In use these articles are not so uncomfortable as an untravelled observer might imagine. For in a hot moist climate the constant perspiration renders a soft, absorbent pillow less acceptable than a cool, smooth, though hard, surface. Besides, sleeping on his back, the Polynesian does not rest his cheek, like the European, but the back of his head, on his pillow.

On Vaitupu, Bridge\* noticed couches carved out of single pieces of wood, with four legs, and a solid block like a pillow at one end.

Under the regime of the Native Teacher every effort is made to Europeanise the Polynesian. If, after cricket and football, the pupils be introduced to the English schoolboy's "pillow fight," serious consequences would ensue.

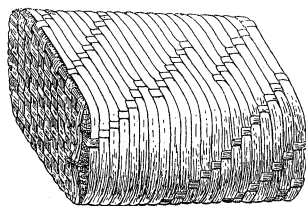


Fig. 61.

Though upon Funafuti the mat cushion did not seem to be employed, it was well known there, and a model of it was made for a member of our party. On Nukulailai, however, I found them in common use. A well-worn specimen procured there is shown by fig. 61. It is formed of woven pandanus leaf, weighs one pound ten ounces, is nine inches long, six high, and four thick.

\* Bridge—Proc. Roy. Geogr. Soc., viii., 1886, p. 554.

The cushion pillow seems less widely distributed than the wooden head-rest. From Tahiti, Edge-Partington notes a "pillow of plaited leaf."\* Of Hawaii:—"It is said that wooden pillows were used in olden times, but if so there are none in this collection [the Bernice Pauahi Bishop Museum]. The Hawaiian pillow is a parallelepipedon of plaited pandanus leaves, stuffed with the same material, capital accompaniment to the Hawaiian mat bed."†

#### FLASKS.

Pottery, strange to any section of the Polynesian people,‡ was of course absent from the Ellice Group, for not only was the potter's art unknown but his raw material does not even occur there. Neither do gourds (*Lagenaria*), so serviceable to natives of other Pacific islands, grow in this archipelago. The Ellice Islanders are therefore restricted in the choice of vessels capable of containing fluids to sea-shells, wooden bowls, and coconut shells. The latter, known as "vei'i," are of a handy size and weight, and for convenient portability are often fitted with sinnet casing and handle. Considerable variation exists in the net-work, which in some cases,

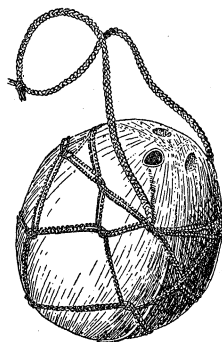


Fig. 62.

foreign to the Ellice, is so close as to conceal the surface of the flask.§ Particularly large nuts are especially valued for flasks, and are prepared by stripping off the fibrous husk down to the hard shell; the contents are abstracted by breaking in one "eye," placing the nut in salt water till the kernel decays, and rinsing out the shell. A stopper is readily improvised from a rolled strip of banana or pandanus leaf. The original of fig. 62, from Funafuti, weighs when empty, fifteen ounces, contains three and a half pints, and is eight inches in major diameter and six in minor.

Flasks are shown on p. 25 receiving toddy. Gill published a sketch of a girl drawing water with one at Vaitupu, as described on p. 60.||

\* Edge-Partington—*loc. cit.*, i., pl. xxxiii, fig. 8.

† Brigham—*loc. cit.*, p. 33.

‡ Cook particularly remarked of some earthenware that he saw in Tonga, "that it was the manufacture of some other isle." (Second Voyage, i., 1777, p. 214).

§ Gourds, as shown by the frontispiece of Erskine's "Cruise in the Western Pacific," 1853, are likewise sometimes mounted with net-work.

|| Gill—*Life in the Southern Isles*, 1876, p. 141.

## BOXES.

The natives of Funafuti use carved wooden box-tubs to hold food, fish-hooks, tobacco, or other small articles when on a canoe journey or a fishing excursion. In travelling these are stowed forward or aft under the decking, but when at anchor fishing, are frequently hitched by the cord over a thwart within reach of the fisherman. The lids with which these are fitted close so tightly as to keep the contents dry even if the canoe be swamped with water. The lid is so strung that it can be raised and slipped over the box, but not entirely detached. In shape and size these box-tubs have a general resemblance to the familiar "billy," of the Australian bushman.

Captain Hudson observed on Fakaafu :—"Boxes or buckets of various sizes, from the capacity of a gill to that of a gallon; they are cut out of the solid wood, and the top or lid is fitted in a neat manner. These are used to keep their fish-hooks and other small articles in to preserve them from the wet."\*

One of these box-tubs is figured with details by Edge-Partington as from Samoa; he writes of it :—"Box and cover of pale wood, stout plaited cord. Labelled, 'a provision-tub, to be carried under the canoe in the water,' † which label is obviously absurd. There are numerous references in literature to the wooden boxes of the Polynesians, but I have not noted any other than the foregoing sufficiently full to distinguish the type under discussion from other forms of boxes, for example, the lavishly decorated caskets of the Maoris, occurring in the Pacific.

Three expressions of the box-tub were secured on Funafuti, where the article is known as "tourouma." The largest specimen in the collection weighs three pounds eight ounces, and has a capacity of a hundred and forty-one cubic inches, stands seven inches high, and is nine inches in basal diameter; like the rest of the series, it appears to be made of *Calophyllum* timber. In general it so closely corresponds with the illustrations above-cited from the Ethnographical Album that it is not necessary to draw it; from the Samoan specimen it differs in a less number of feet, possessing but ten equally spaced triangular supports, of less breadth than their interstices.

The lid is secured in a particularly ingenious way, it is "rabbeted on" so that the rim of the lid is outside flush with the wall of the box and inside fits against the flange of the box. The latter being slightly undercut, it is necessary to press the cover home. The lid only shuts in one position, and when down can be more securely fixed by slightly rotating it. The other specimens close in a simpler manner, so that it is possible that the shutting

\* Wilkes—*loc. cit.*, v., p. 18.

† Edge-Partington—*loc. cit.*, ii., pl. xl., fig. 8.

of the largest box is more a matter of accident than of design. This box is further exceptional in having a square piece of wood neatly let into the centre of the floor. Probably the tree which furnished the material was decayed at the core, and it was thus that the defect was remedied.

Two similar specimens vary from the foregoing in having no supports beneath, and no cleat on the summit of the lid. Instead the lugs on the box are continued into a pair on the lid, which latter is perfectly flat above. Both pairs are pierced by holes which continue from the lid through the box and through which a cord of *Broussonetia* is rove, these lugs serve therefore as running cleats. The taller box-tub is drawn on fig. 63 as open and closed, with the under aspect of the lid apart; the closed one is seen to be fastened in the native fashion by twisting the cord round the side. It is seven inches high, six and a half in basal diameter, weighs two pounds, and has a capacity of ninety-seven cubic inches, the sides are straight but the bottom is somewhat rounded. The other specimen differs in proportions and in having a flat base. It is five and three-quarter inches both in height and in basal diameter, and five and a half inches in least diameter across the lid, weighs one pound fifteen ounces, and contains fifty-nine cubic inches.

A third form of tourouma, shown by fig. 64, is intermediate in features between the others. It has a central running cleat on the lid like the first described, but those on the box are set half-way down the side and at right angles to those previously considered. The base is fairly flat and without feet. The lid has without a bevelled edge, and within a central excavation and a sub-marginal groove to receive the flange of the box. This box-tub is taller in proportion to breadth than the others and also tapers more upwards. From base to top of cleat is eight inches, the base is six and a half inches in diameter, and the top five and a half. It weighs one pound eleven ounces, and holds seventy-five cubic inches.

#### WOODEN DISHES.

These necessary and valued utensils are possessed by every household and are made in diverse sizes and shapes. The absence

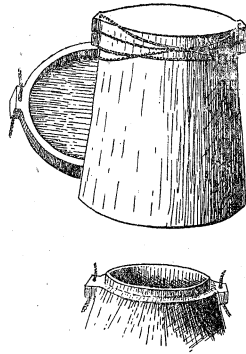


Fig. 63.

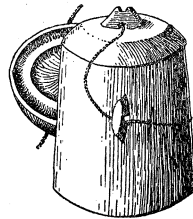


Fig. 64.

of ornament, so marked a feature in all the appurtenances of the Ellice Islanders, is again obvious in surveying the bowls. The fanciful carving which other Pacific people delight to lavish upon these receptacles, is here totally wanting.



Fig. 65.



Fig. 66.



Fig. 67.

A wooden dish of an uncommon pattern is the "babanak," shown by fig. 65, the name of which suggests to me a Micronesian derivation. This article is rudely circular, with outwardly sloping wall, ending in a lip. It weighs one pound thirteen ounces, stands four and a half inches high, is twelve and a half inches in diameter above and seven inches across the base. The rim is half an inch thick, three-quarters wide, and projects half an inch from the wall.

The common food bowl of which fig. 66 is an instance, is here known as "kumiti," a name which seems to be associated with this article from Samoa to the Solomons. The specimen of this before me is an elliptical trough, tapering to lugs at either end, standing on a flat base of half the total length; it weighs two pounds nine ounces, stands three and a quarter inches high, is nineteen and a half inches long, and nine and a quarter wide. Another form of kumiti, larger and without lugs, is shown on p. 28, employed as a tank.

A wooden mortar, in which taro or coconut is pounded for cooking, is called "kumiti tuki." Except that it is elliptical rather than circular, the shape is that of the European equivalent. This form is here exemplified by a specimen (fig. 67) apparently of *Calophyllum* timber, weighing six pounds, eight inches high, excavated to a depth of six inches, at the aperture twelve inches by ten, and at the base eight by seven.

#### PESTLES.



Fig. 68.

Pestles for mashing taro and coconut form part of the equipment of every kitchen. A pattern called "jini" is exemplified by fig. 68. It is unsymmetrically ovate, truncate at the broad end and surmounted by a knob, which is much chipped in our example, at the opposite end. It is of a hard heavy polished wood, perhaps *Thespesia*, weighs three pounds six ounces, is ten inches long, and five and a quarter broad at its greatest diameter.

Another pounder (fig. 69) is eighteen inches long, straight, tapering from two and a half inches at the butt to half an inch at the opposite end. A pagoda-shaped handle is formed by incised carving of the final four inches. It is one pound ten ounces in weight, and made, I think, of *Pemphis* timber.

A third form is drawn at fig. 70. This, called "tuki tuki," is club-shaped, two feet seven and a half inches long. At one end the diameter is three and three-quarter inches, at the other an inch and a half. The weight amounts to five pounds eight ounces. This form was used standing, but the lesser pestles were used sitting.



Fig. 70. Fig. 69.

## DRUM.

Two radically distinct types of drum, each with numerous variations, co-exist in the Pacific. The one which seems to attain its greatest development in Papua is akin to the European drum, consisting like it of a skin tympanum stretched on a wooden cylinder. The other and ruder form is more characteristic of Polynesia, it consists merely of a boat-shaped, hollow log, beaten on the exterior.

The drum, "batti," of Funafuti (fig. 71) belongs to the latter division. Formerly it was used at dances and festivals, now it appears only to summon the worshippers to church,\* and the only specimens on the island seemed to be those in the possession of the Native Teacher. A well-worn example I obtained from him weighed four pounds four ounces, and measured nineteen inches in greatest length, four and a half in depth, and three and a half in width. The excavation is three and a half inches deep, twelve long, and one and a half wide. The drumstick, "kouta," weighs four ounces, and is ten inches long, and one thick. In another example, the drum was carved of *Thespesia* and the stick of *Pemphis* wood.



Fig. 71.

To call the people together to a trial or other public ceremony, a shell trumpet of *Cassis cornuta* was blown.

## LANCETS.

For bleeding, and for lancing boils, etc., the native surgeons make use of shark's teeth set in wooden handles. I procured on Nukulailai two old, worn and stained specimens, measuring seven and a half and six inches, and weighing 3.55 and 3.54 grammes

\* As in the Tokelau Islands, Lister—*loc. cit.*



respectively. A piece of wood, somewhat the size and shape of an ordinary penholder, is split at its extremity for an inch, into which a small shark's tooth is inserted and bound in the cleft, by cotton in one case and by native fibre in another.

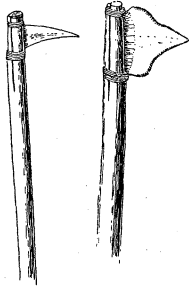


Fig. 73. Fig. 72.

On Funafuti I failed to purchase original specimens, though such were in existence at the time of our visit. Models were, however, made for me, larger and rougher than the Nukulallai specimens. The serrate-toothed lancet, from the jaw of *Galeocerdo rayneri* (fig. 72) for bleeding, is called "nifikifa"; the straight-edge tooth lancet from *Carcharias lamia* (fig. 73), for puncturing, is known as "bunga."

These instruments were described to me as used like a tattooing pen, that is, the handle was held in the left hand so that the point of the tooth was placed just over the spot to be punctured, then the handle was smartly tapped by a stick held in the right hand and the point driven in. Dr. Collingwood writes:—"The tooth of the instrument is placed over the abscess, and with one blow it is forced into the cavity of the same, while there the extremity of the handle of the lance is made to pass through a semicircle, with the result in a skilful hand an elliptical piece of flesh is removed, thereby preventing the two rapid closure of the wound."\*

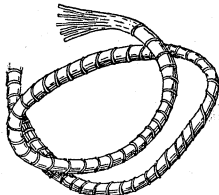


Fig. 74.

In Tahiti, "they were clever at lancing an abscess with the thorn from a kind of bramble or a shark's tooth."†

Fig. 74 shows a roll of prepared bark of the vala-vala (*Premna taitensis*) used in cauterization, as mentioned on p. 37.

In Hawaii the skin was scorched with fire-brands in times of mourning.‡

In Japan, "moxa, or the burning of a small cone of cottony fibres of the *Artemisia*, on the back and feet, was practised as early as the eleventh century, reference being made to it in a poem written at that time."§

\* The *Tasmanian Mail*, 6th March, 1897, p. 34.

† Ellis—*loc. cit.*, iii., p. 44.

‡ Ellis—*loc. cit.*, iv., p. 181.

§ Griffis—*The Mikado's Empire*, 1887, p. 207.

## FIRE STICKS.

Almost without exception fire has been obtained by all primitive people by the rubbing together of pieces of wood. In detail, however, the process differs greatly among different races.

Among Australian Aborigines the usual method was to press and twirl between the palms a perpendicular rod in a hole in a fixed horizontal stick.\* The ancient Egyptians, likewise, rotated a perpendicular upon a horizontal stick, but employed a bow to revolve the upright.

Another method, approaching more closely to the form we are about to consider, is the fire-saw used in Borneo and Australia under several forms,† the general principle of which consists of sawing an edged rod in a notched one.

Throughout the Pacific Islands one method, and, as far as I am aware, only one is employed, that of ploughing a wooden blade in a groove. It is thus described by Woodford in the Solomons:—“A stake of dry, soft wood is selected, a convenient size being about as thick as the wrist. For convenience a few chips are sliced off in one place to make a flat surface to rub upon. The stake is then placed upon the ground in front of the operator, who sits on one end of it and holds it steady between his toes, then with a pencil-shaped piece of harder wood, held firmly in both hands, he begins rubbing up and down upon the flat surface. A groove is formed and a dark coloured dust soon produced, which is pushed to the farther end of the groove. The dust before long begins to smoke. The pace is increased, and it begins to smoulder. A piece of dry touchwood is then applied to it and quickly blown into a glow. With perfectly dry wood a native will almost certainly produce fire in less than a minute.”‡

Though the general process has been repeatedly described, the exact method of gripping the stick with the hands has not, I believe, been explained.§ The crossed thumbs are placed beneath the stick, the flexed fingers of one half-opened hand are placed above it, and upon them are laid the fingers of the other hand, this posture (fig. 75) allowing the operator to lean the whole weight of his body on the stick, while rapidly moving it to and fro, at about half a right angle to the grooved stick. In an example from Funafuti before me, the blackened groove is three and a half inches

\* For details and figures see Brough Smyth—*Aborigines of Victoria*, i., 1876, p. 392, figs. 231, 232.

† Roth—*The Natives of Sarawak and British North Borneo*, i., 1896, p. 377, fig.; and Brough Smyth—*loc. cit.*, p. 395, figs. 223, 224.

‡ Woodford—*A Naturalist among the Head-hunters*, 1890, p. 161. See also Lamont—*op. cit.*, p. 156.

§ Since writing this, an excellent figure and description of the process by Lieut. B. T. Somerville, R.N., (*Journ. Anthropol. Inst.*, xxvi., 1897, p. 376, pl. xxxv.), has reached me.

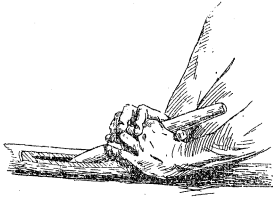


Fig. 75.

long, a third of an inch wide, and an eighth of an inch deep. The flattened surface cut for its reception is five inches long and one-half inch broad. The stake, "kousikanga," of dry *Premna taitensis* chosen, was originally about six feet long and an inch and a half in diameter. The wooden knife "koufataronga" used on it is of another timber, nine inches long, one wide, and half an inch thick,

obliquely truncated at the worn end.

In Hawaii, "a smaller stick, the *aulima*, is held in the hand and rubbed in a groove in a larger stick, the *auunaki*."\*

The reverence, amounting almost to fire-worship, paid to fire by different settlements of the Tokelau people, is related *ante* p. 55.

#### TOYS.

A game formerly played on Funafuti, but which is not now practised, was that of throwing a toy dart. I have gathered a few references to this game as played elsewhere in the Pacific, but further literary search would probably widen the known range.

Captain Erskine has thus described the game as he saw it played in Fiji:—"On our return to the Mission house we met a number of men in full dress, that is, painted either black or red, their hair frizzed out, and decorated with blue beads, some wearing garters or bands tied in bows under the knee, and a few with a kilt or petticoat, resembling that of the women. Each carried a short cane, with an oblong, pear-shaped head, forming a kind of blunt dart, with which a game called "tika," or "titika" is played. We followed them to the spot, which presented a very gay scene, a hundred or so of persons being assembled at the sides of a level, well swept mall, about one hundred and fifty yards long, and five or six wide, skirted with trees and shrubs. Each player advanced in turn, and threw his dart at a mark placed at the end of the mall, but none of them exhibited much skill, nor did the game seem to us one of any interest, and all were quiet and decorous."‡

On the authority of Dr. Turner, Edge-Partington publishes from Niue a "head of a dart used in a game," which closely resembles the one before me.§

\* Brigham—*loc. cit.*, pt. ii., p. 31.

† Erskine—*Journal of a Cruise among the Islands of the Western Pacific*, 1853, p. 169.

‡ Another description of the game in Fiji is given by the Rev. J. G. Wood—*Natural History of Man*, ii., 1870, p. 283. In the *Journal of the Godeffroy Museum*, iv., 1876, pl. xvi., fig. 1, a player is drawn in the act of casting his dart, "ulutoa." The attitude is the same shown me on Funafuti.

§ Edge-Partington—*loc. cit.*, i., pl. xxxix., fig. 1.

In the Banks Island and the New Hebrides "the game is played by two parties, who count pigs for the furthest casts, the number of pigs counted as gained depending on the number of knots in the winning tika. There is a proper season for the game, that in which the yams are dug, the reeds on which the yam vines had been trained having apparently served originally for the tika. When two villages engage in a match they sometimes come to blows."\*

Ellis also describes this game from Tahiti and Hawaii.† Gill has given a chant from the Hervey Islands for a reed throwing match for women.‡

Dr. Gill notes in his Diary that it was formerly the custom on the island of Nanomana, Ellice Group, that "when a young man wins a reed throwing match, his own sister testifies her joy by coming into the assembly stark naked and clapping her hands."

A model of this toy made for me by an old native of Funafuti, is represented by figs. 76 and 77. The entire article is called "jiga," and the separate head is "urotoa." The stem is a light rod of *Scaevola* wood, an ounce in weight, three feet in length, and half an inch in diameter; the head, perhaps modeled from a whale's tooth, is of *Pemphis* wood, a cone whose truncated base is produced into a spike, carved in one piece, in weight four ounces, in total length eight inches, the spike being a third thereof, and in greatest breadth an inch and a half. It is mounted by thrusting the spike home into the soft pith of *Scaevola* rod.

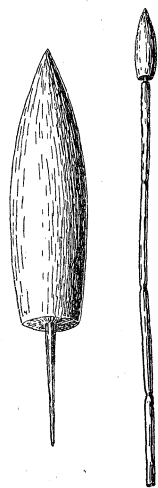


Fig. 76. Fig. 77.

Another toy consisted of a cube of plaited pandanus leaf, served as a light ball, with which, on the beach, groups of girls amused themselves by tossing to each other and catching. A specimen of the "anou," as this is called on Funafuti, is shown by fig. 78, it weighs three-quarters of an ounce, and measures two inches cube.

From Ruk, in the Carolines, the Bernice Pauahi Bishop Museum possess a "cube of plaited pandanus leaf used as a ball."

Ellis has described a game, "haru raa puu," played by the Tahitians with a large ball of the tough stalks of the plantain leaves twisted closely and firmly together.§

\* Codrington—The Melanesians, 1891, p. 340.

† Ellis—Polynesian Researches, i., 1836, p. 227; iv., p. 197.

‡ Gill—Myths and Songs, 1876, p. 179.

§ Ellis—loc. cit., i., p. 214.

At Simbo, in the Solomons, Mr. N. Hardy tells me he saw a globular leaf ball tossed from hand to hand.

Spinning tops I found to be a popular amusement on Nukulailai. Their tops were simply cone shells (*Conus hebraeus* and *C. pulicarius*) spun on their apices. A game was to spin two shells into a wooden dish out of which by rotating and colliding the winner would knock the loser. The shells were spun either like a teetotum between the finger and thumb, or, to give greater force, the anterior end was steadied by the finger and thumb of the left hand, while the impetus was given by drawing the right fore-finger briskly across it, as shown in fig. 79. A shell of *C. hebraeus* I purchased, the broken lip of which betokened much service, was called "vaitalo."

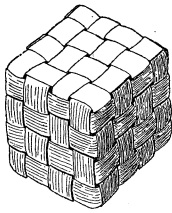


Fig. 78.



Fig. 79.

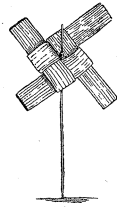


Fig. 80.

On Funafuti, a sort of toy windmill was contrived by plaiting four arms of palm pinnule, mounting this on a stand of palm riblet, and thrusting the latter into the sand. The wind would then rotate the arms. This toy, called "bekka," is shown at fig. 80.

Mr. J. S. Gardiner tells me that he saw this toy windmill in Rotumah, and it has been lately recorded from the Solomons by Lieut. B. T. Somerville, R.N.\*

#### ADDENDUM.

*Sandals.*—Since revising the preceding pages (243-4) dealing with the Pacific sandal, I have seen a figure and description of an interesting sandal of *Cordyline* fibre from New Zealand by Mr. O. T. Mason.† Another article is thus added to the long list of those common to every main division of the Polynesian Race. It is interesting also to note that this Ethnologist detects in the border loops for the lacing a similarity between the Polynesian and a Korean pattern.

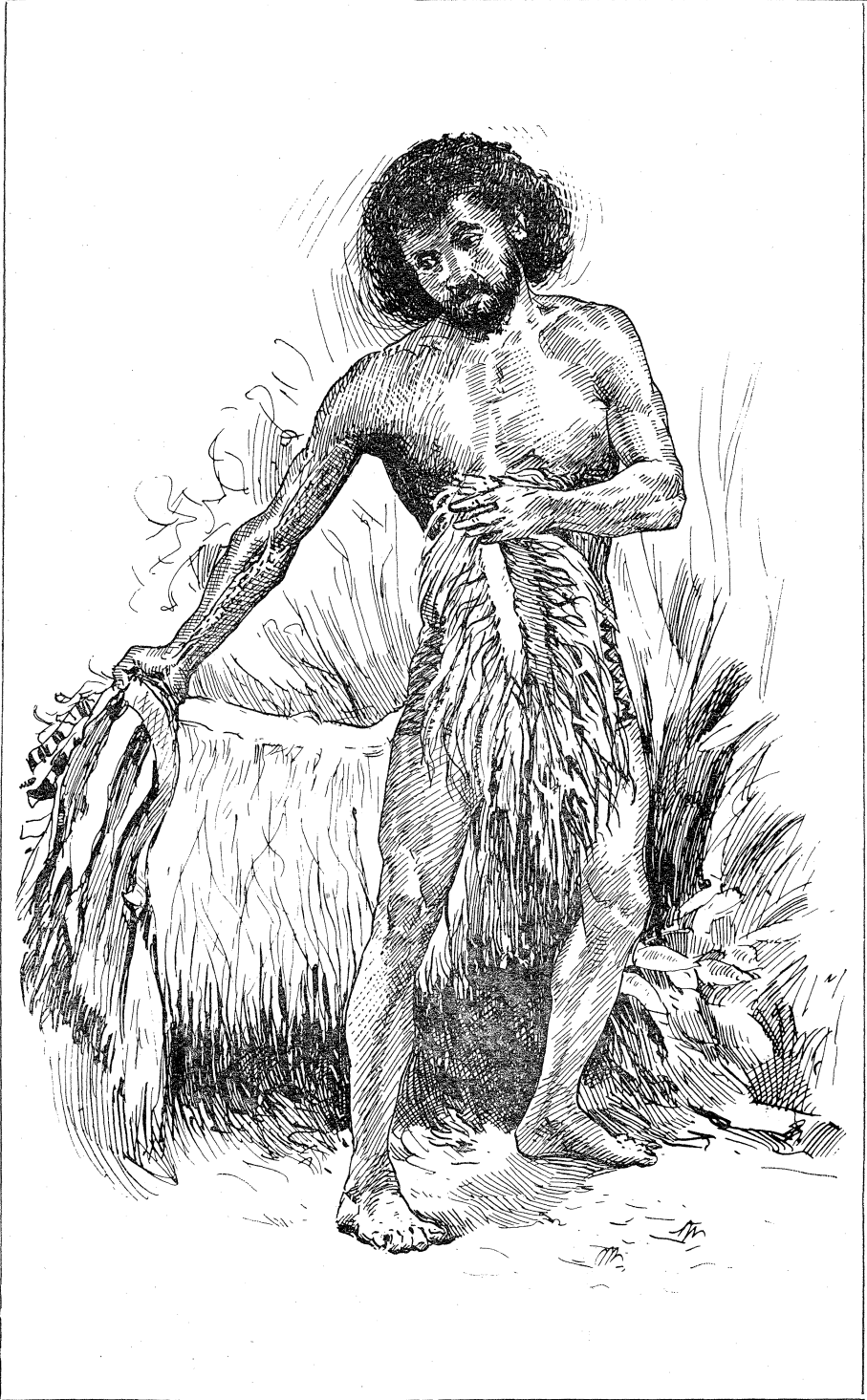
\* Journ. Anthropol. Inst., xxvi., 1897, p. 409.

† Mason—Primitive Travel and Transportation, Report U.S. National Museum, 1894 (1896), p. 315.

EXPLANATION OF PLATE XIII.

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Method of putting on a "tukai" dress.



N. HARDY, del.

EXPLANATION OF PLATE XIV.

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Method of scraping coconut with the "twalkarea."

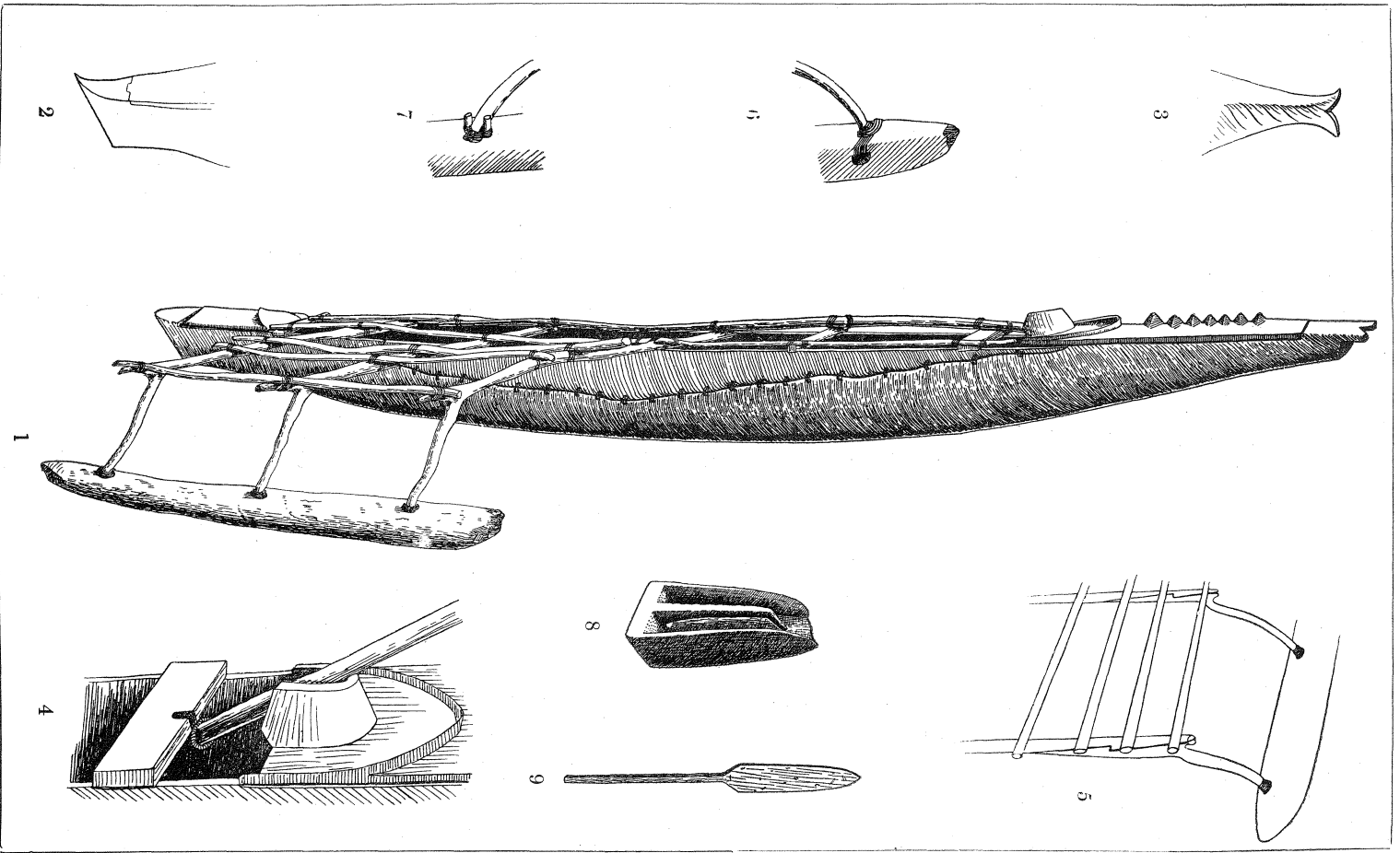




EXPLANATION OF PLATE XV.

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- Fig. 1. A canoe from Funafuti.  
„ 2. Stem of another specimen.  
„ 3. Stern of another specimen.  
„ 4. Fishing rod in position.  
„ 5. Divisible outrigger for detaching float.  
„ 6. Float perforated for fastening to outrigger.  
„ 7. Float pegged for fastening to the outrigger.  
„ 8. Bailer.  
„ 9. Paddle.



C. HEDLEY, del.

## CORRECTIONS.

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- Page iii., paragraph 2, line 2—*for* “Mervyn” *read* “Mostyn.”  
,, 9, ,, 4, line 1—*for* “Mervyn” *read* “Mostyn.”  
,, 20, foot-note § —*for* “1844” *read* “1884, p. —.”  
,, 71, paragraph 3, line 4—*for* “supplied” *read* “applied.”  
,, 97, line 6 —*for* “Nob” *read* “Latr.”  
,, 98, line 17 —*for* “Nob” *read* “Macq.”  
,, 155, heading, above Echinodermata, *read* “ [VII.] ”  
,, 220, line 34 —*for* “VIRIDE” *read* “VIRIDIS.”  
,, 231, line 2 —*for* “genealogies” *read* “genealogies.”  
,, 250, foot-note § —*for* “ix.” *read* “xi.”  
,, 276, foot-note † —*for* “1897” *read* “1887.”  
,, 301, foot-note \* —*for* “1876” *read* “1878.”  
,, 389, paragraph 3, line 1—*add after* fig. 2, “and Plate xxvii., fig. 1.”  
,, 389, ,, 4, line 3—*for* “fig. 6” *read* “fig. 2.”  
,, 389, ,, 4, line 7—*for* “fig. 7” *read* “fig. 1.”  
,, 390, ,, 3, line 2—*for* “fig. 8” *read* “Plate xxvii., fig. 2.”  
,, 390, ,, 3, line 10—*delete* “fig. 8.”  
,, 392, ,, 2, line 4—*for* “perceptable” *read* “perceptible.”  
,, 398, ,, 2, line 4—*for* “indicate” *read* “indicates.”  
,, 398, ,, 4, line 4—*for* “have” *read* “has.”  
,, 399, ,, 4, line 8—*for* “reject” *read* “rejects.”  
,, 528, line 16 —*for* “davidi” *read* “davidis.”  
,, 530, line 38 —*for* “Chiridota” *read* “Chirodota.”